

FIG. 1

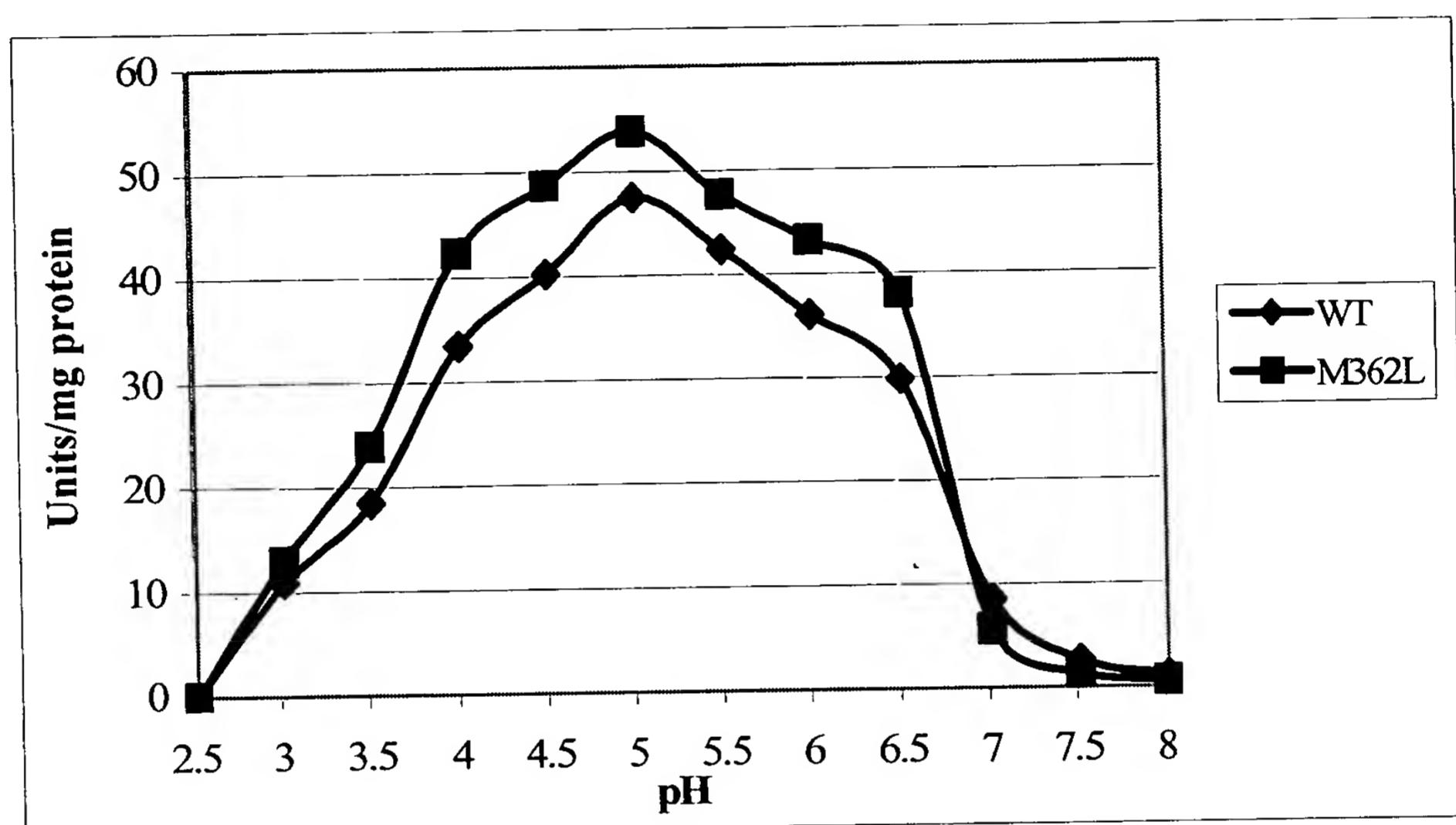


FIG. 2

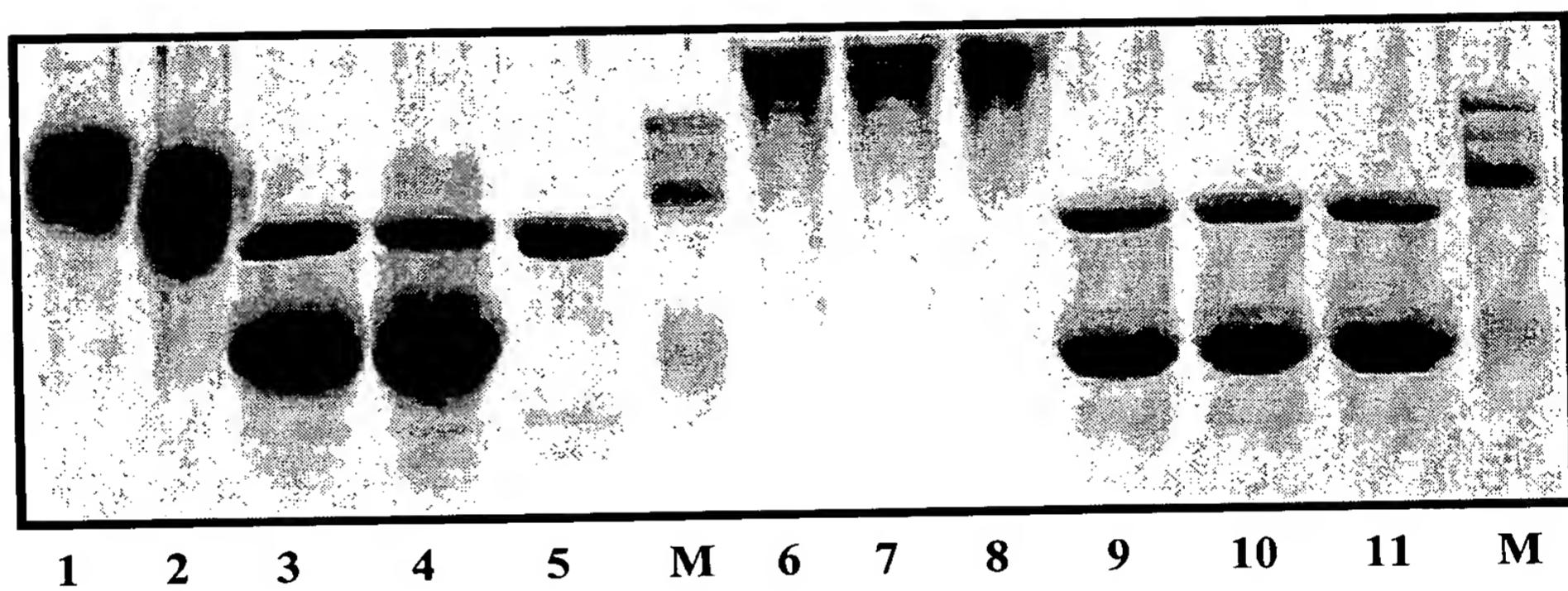


FIG. 3

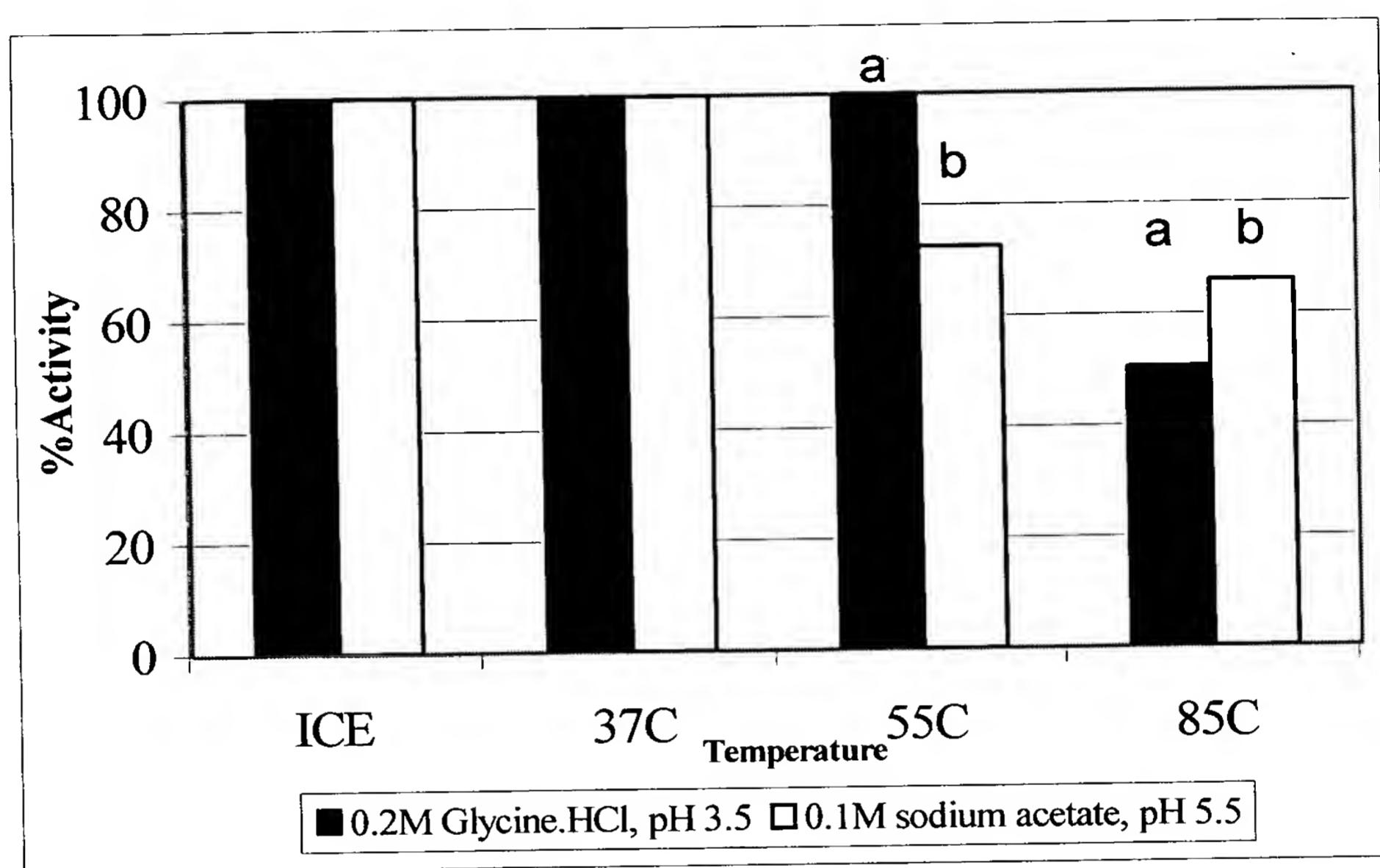


FIG. 4

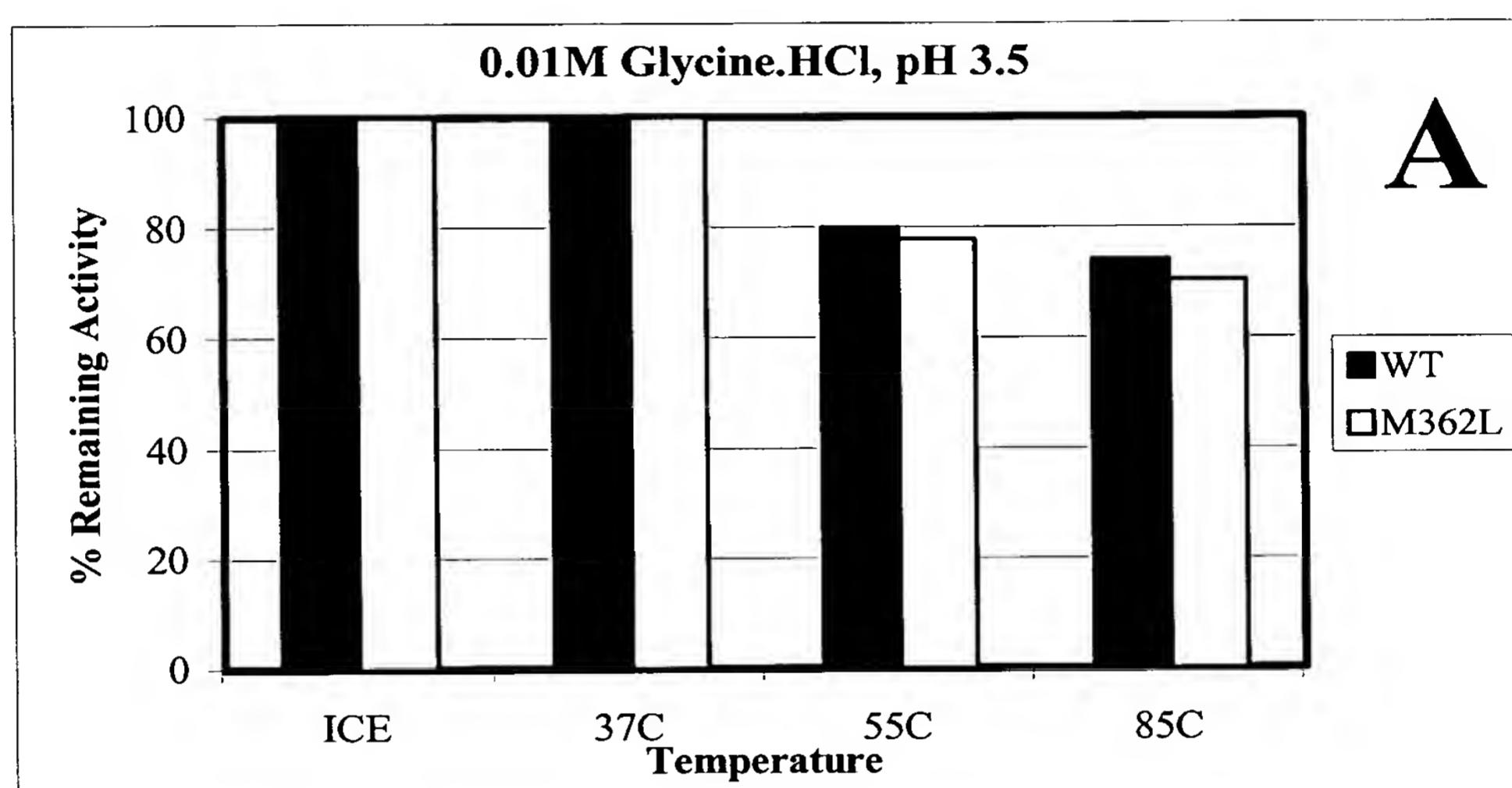


FIG. 5A

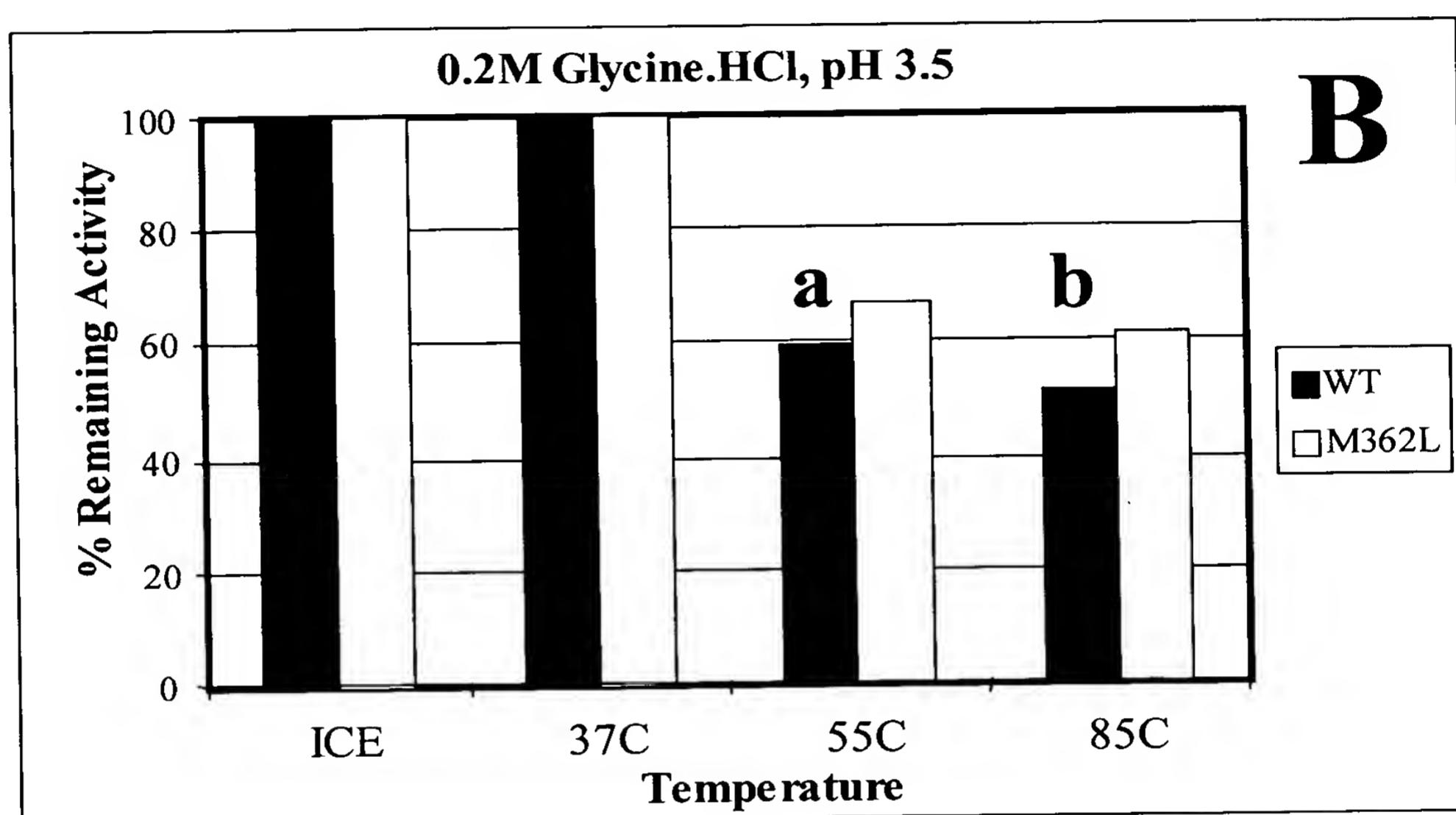


FIG. 5B

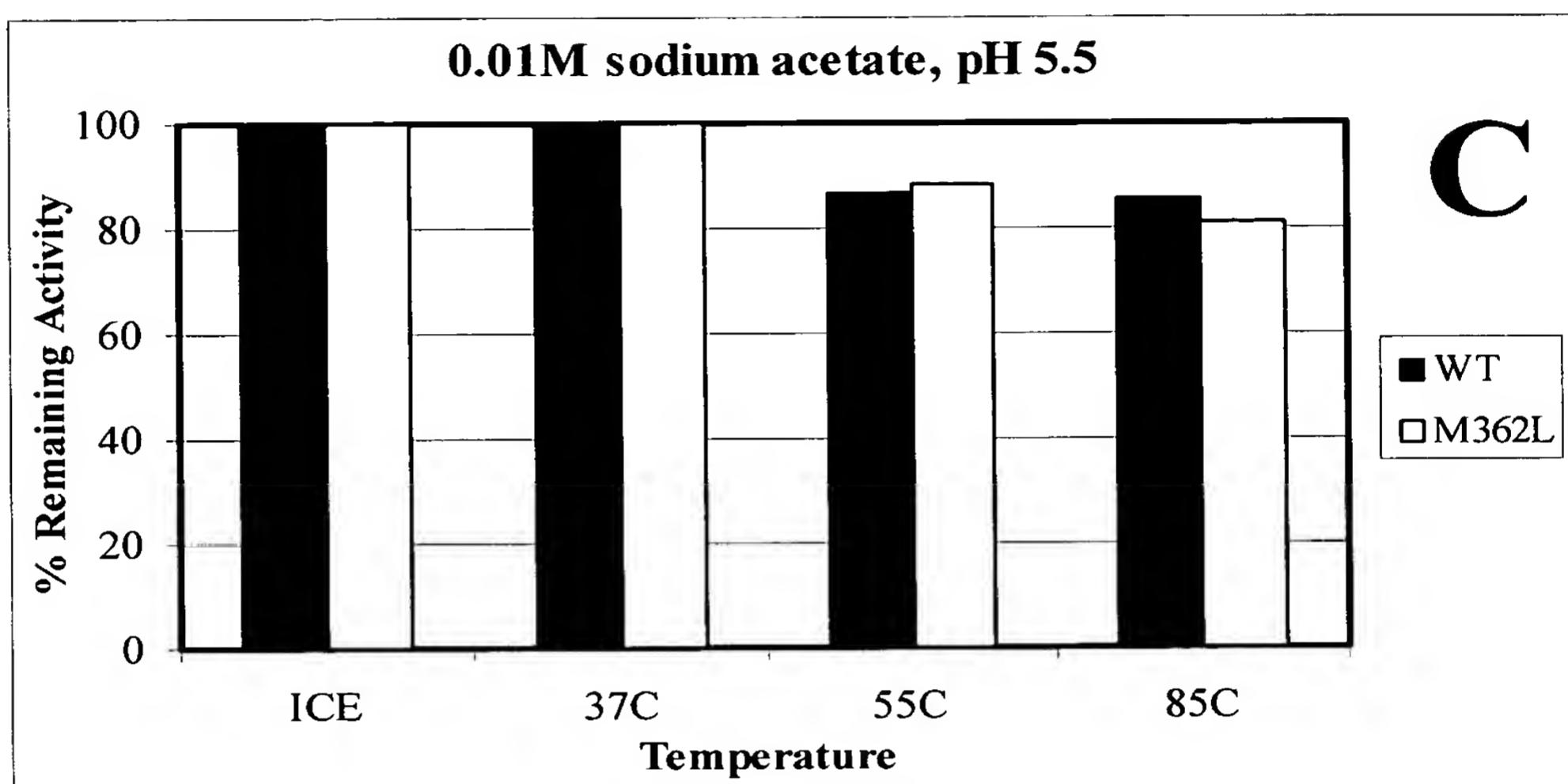


FIG. 5C

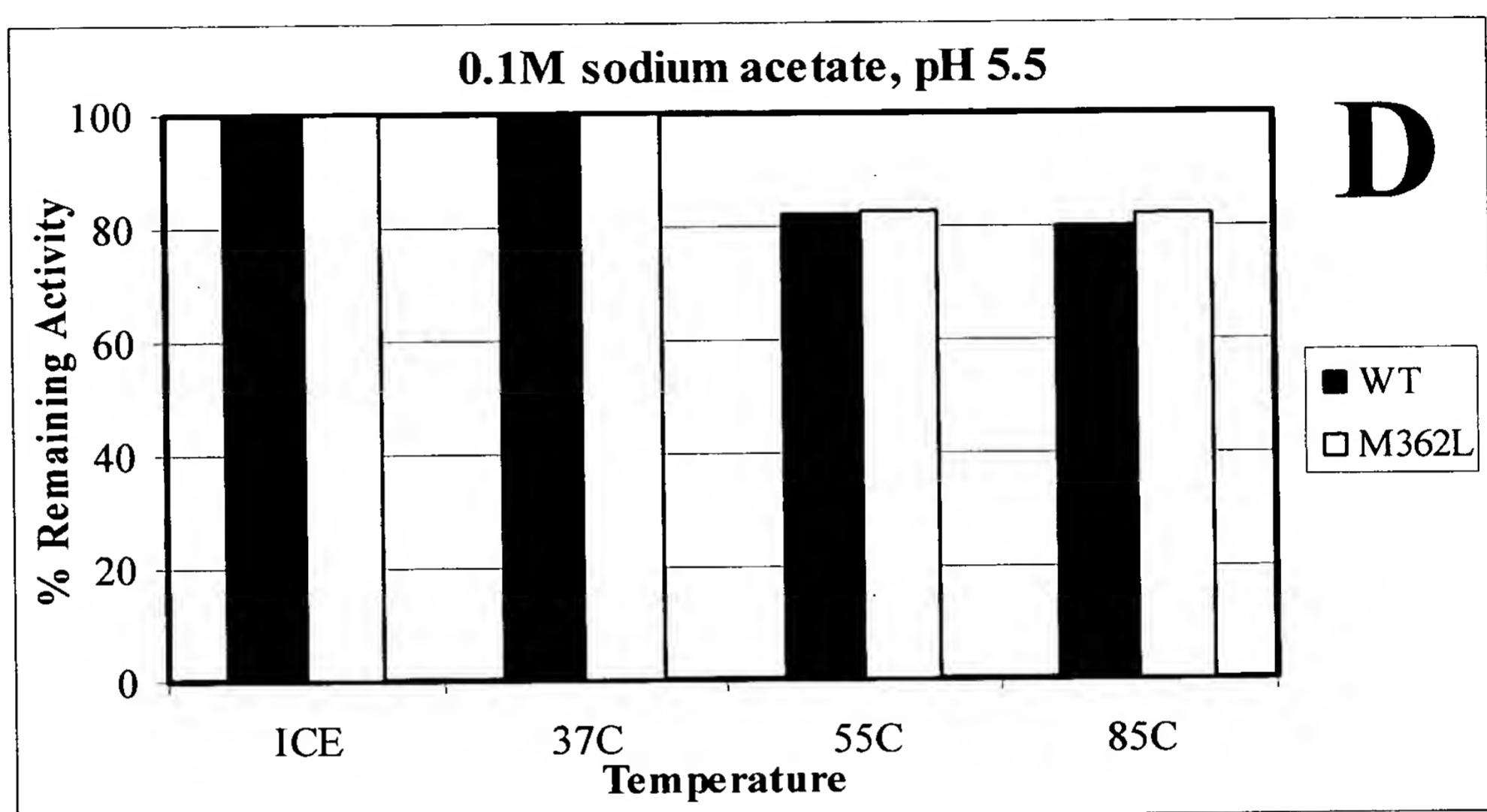


FIG. 5D

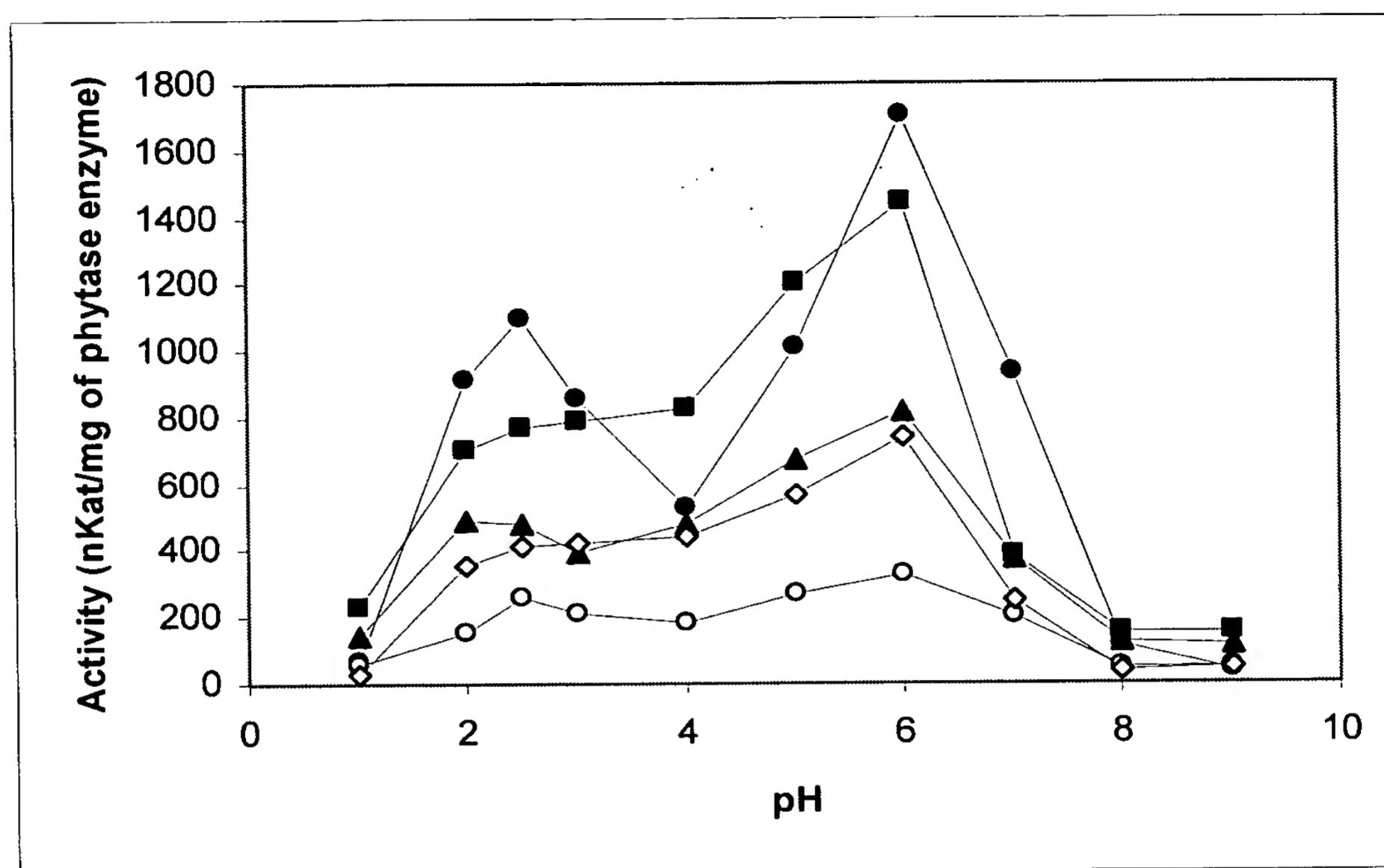


FIG. 6

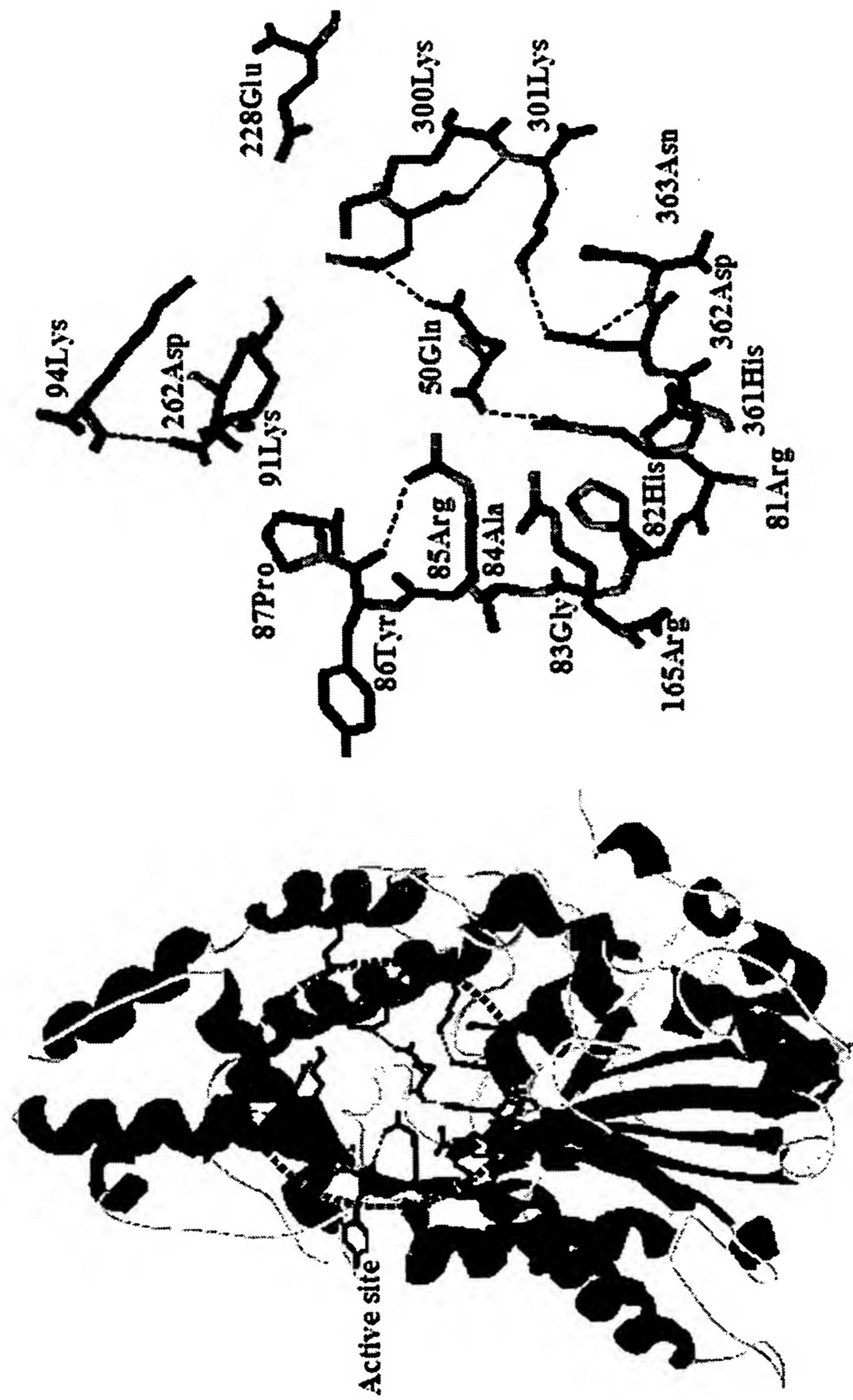


FIG. 7B

FIG. 7A

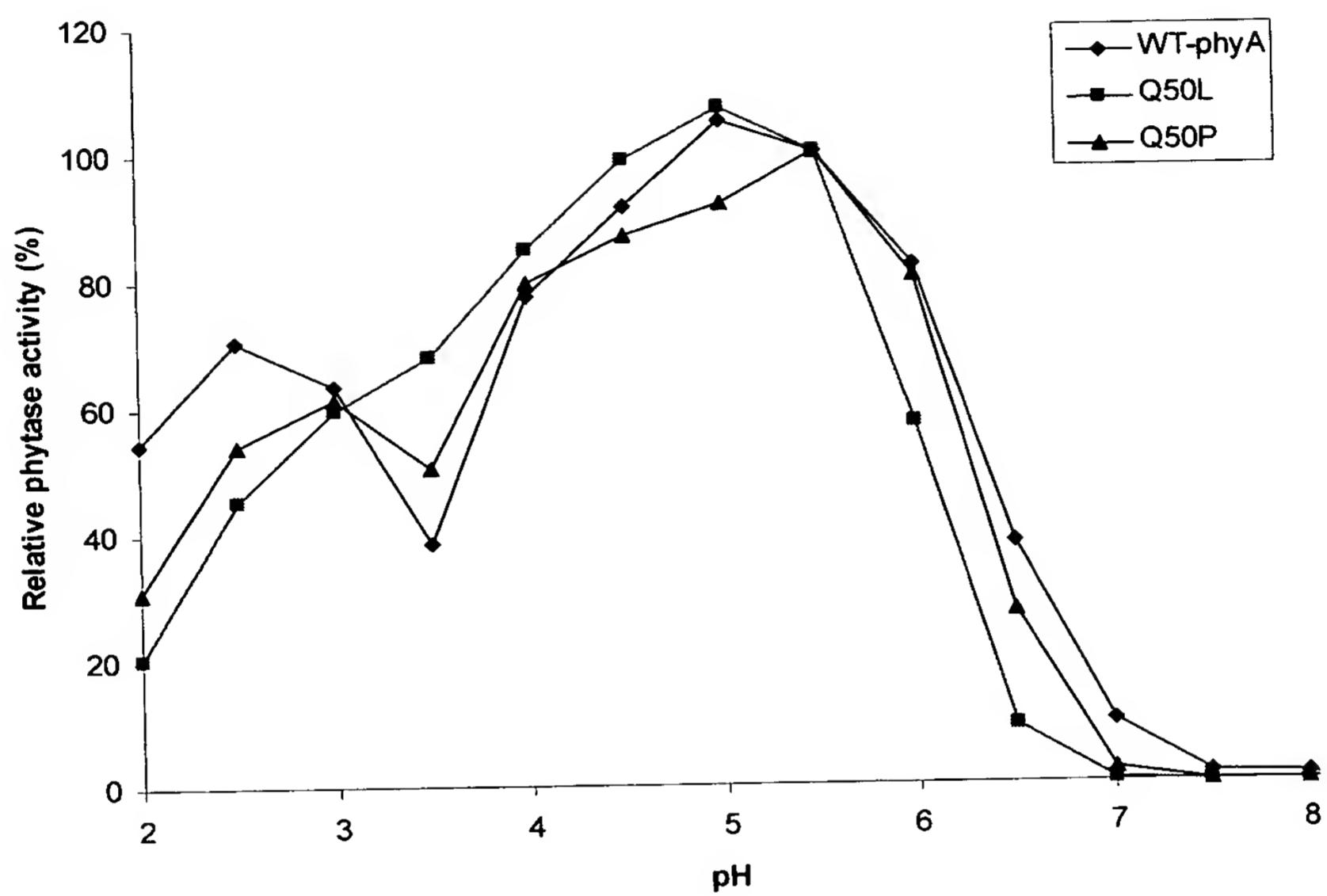


FIG. 8A

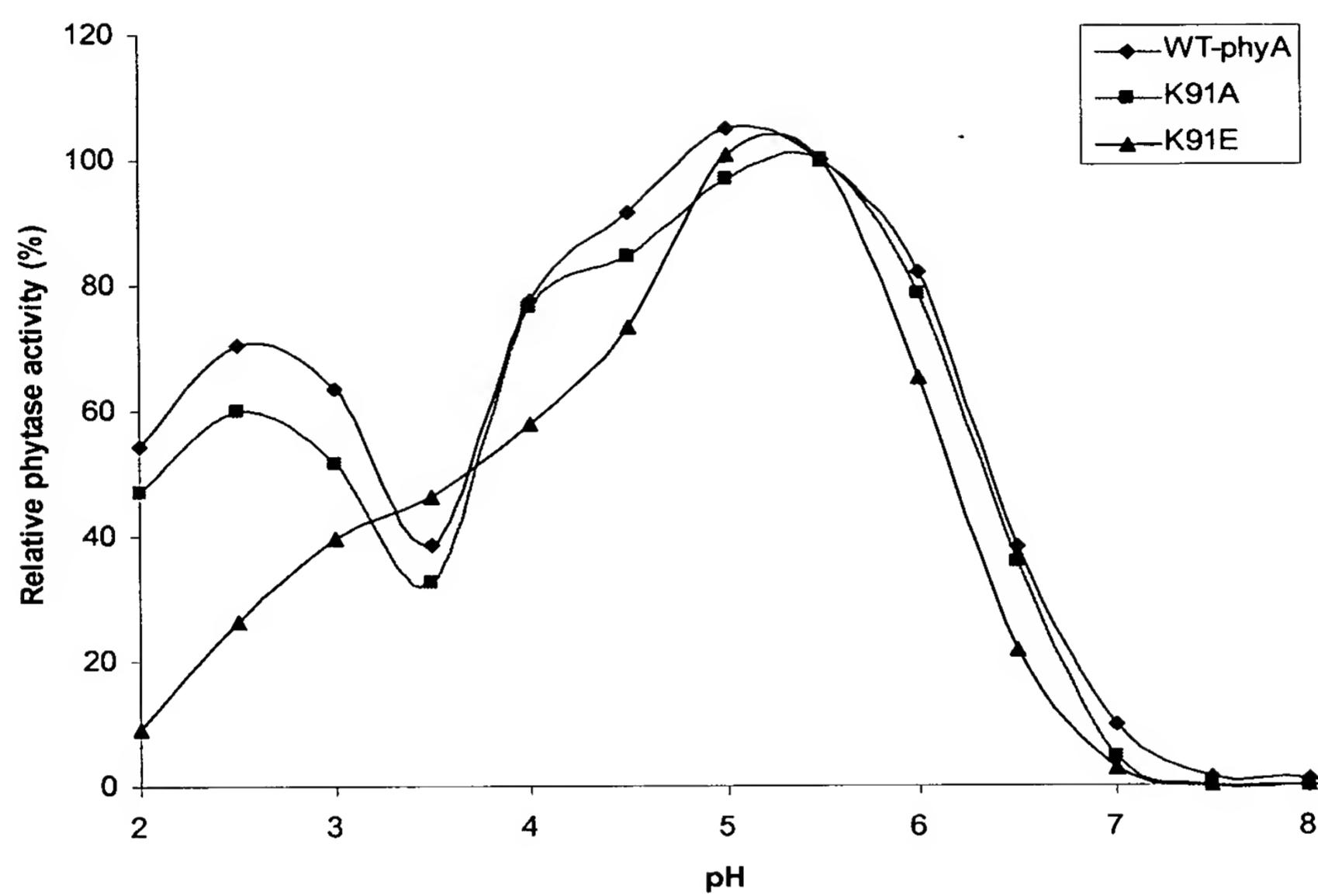


FIG. 8B

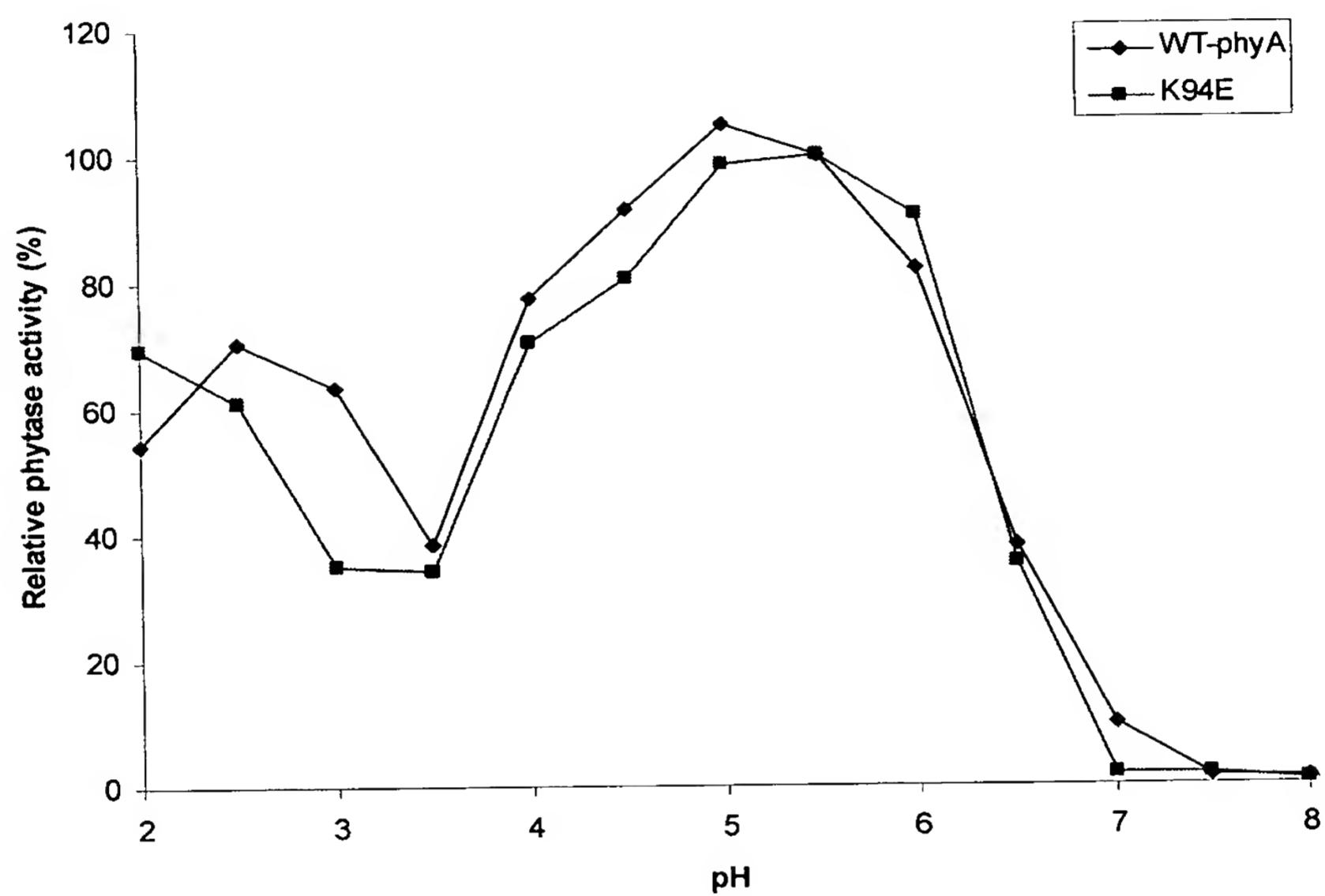


FIG. 8C

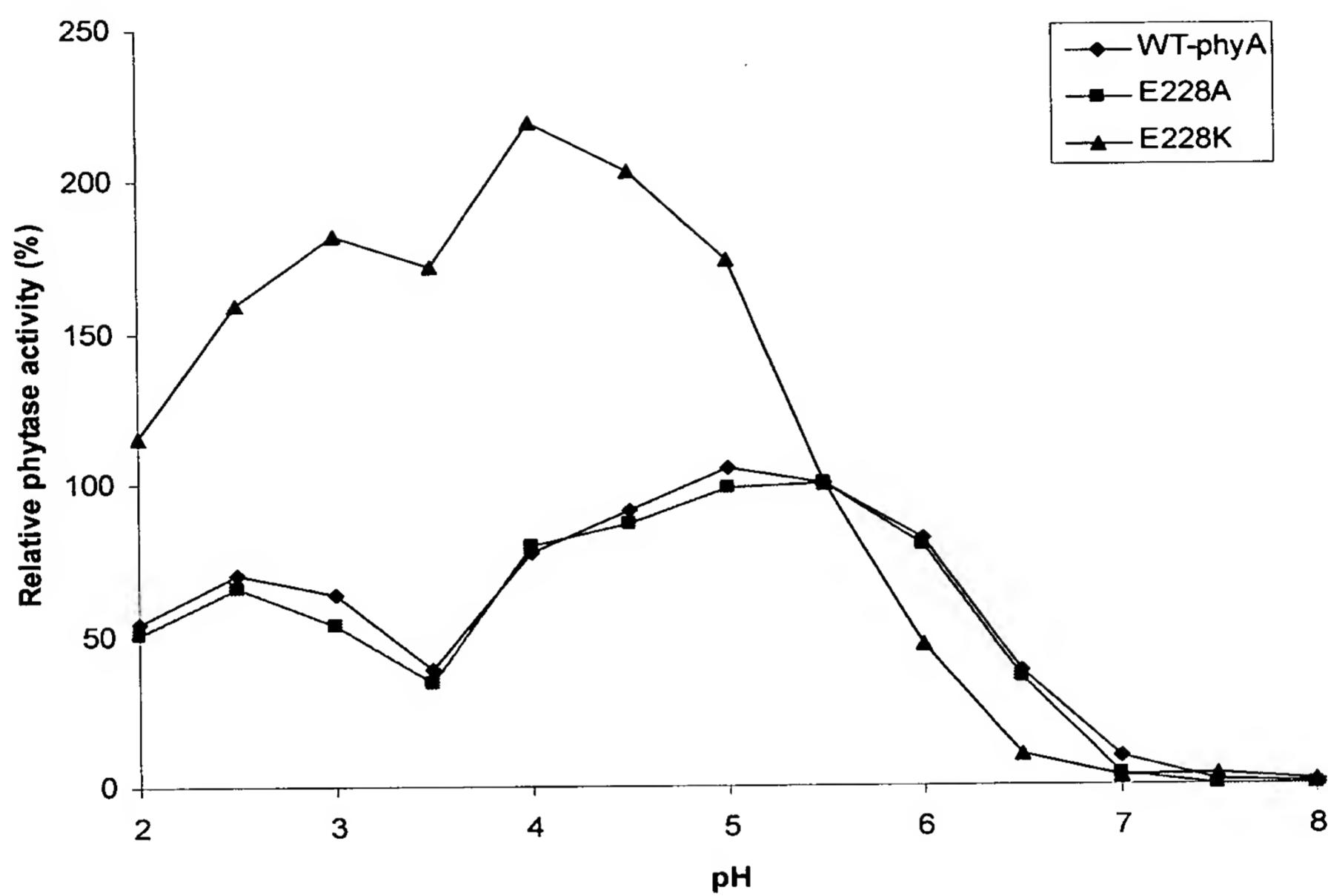


FIG. 8D

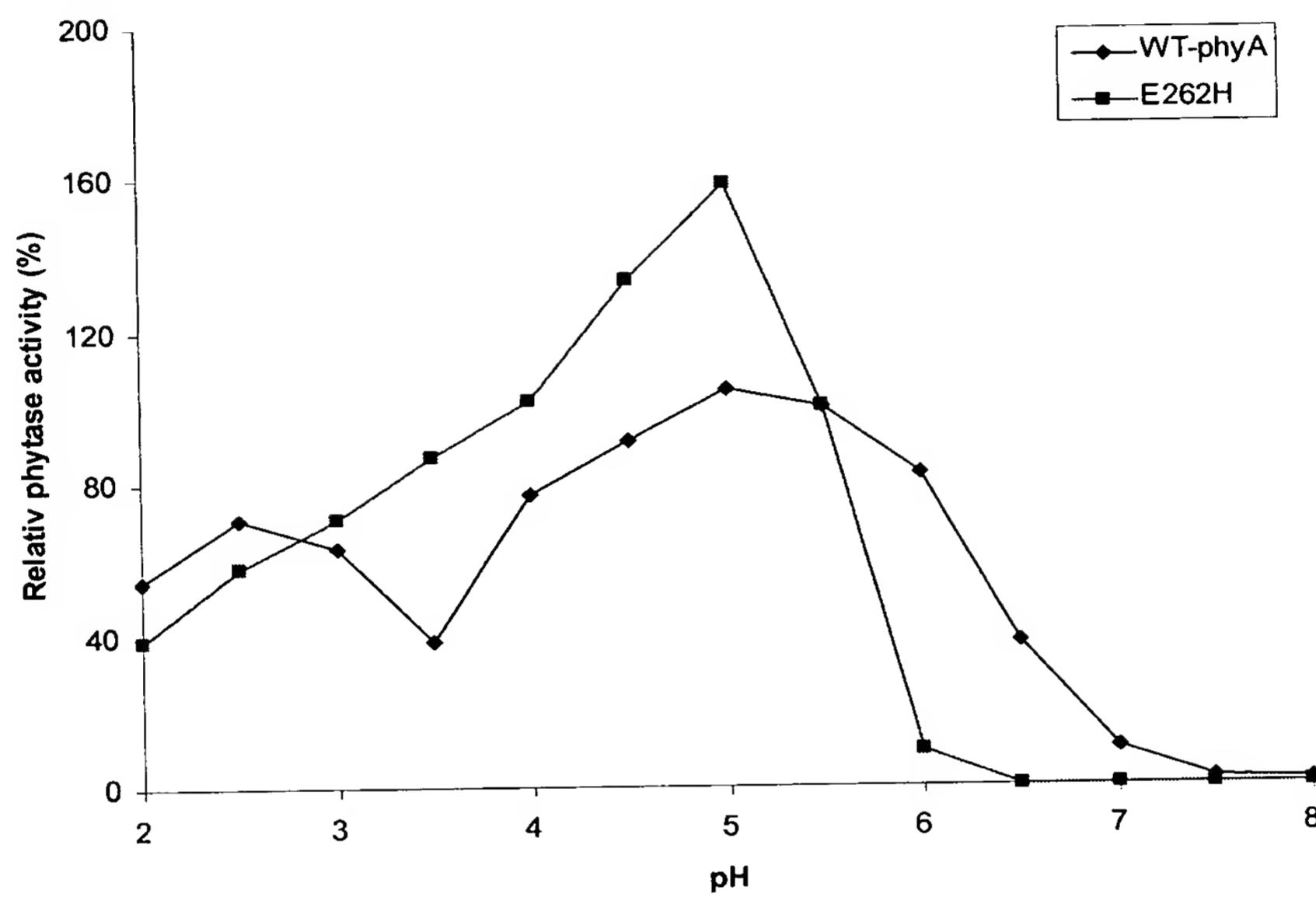


FIG. 8E

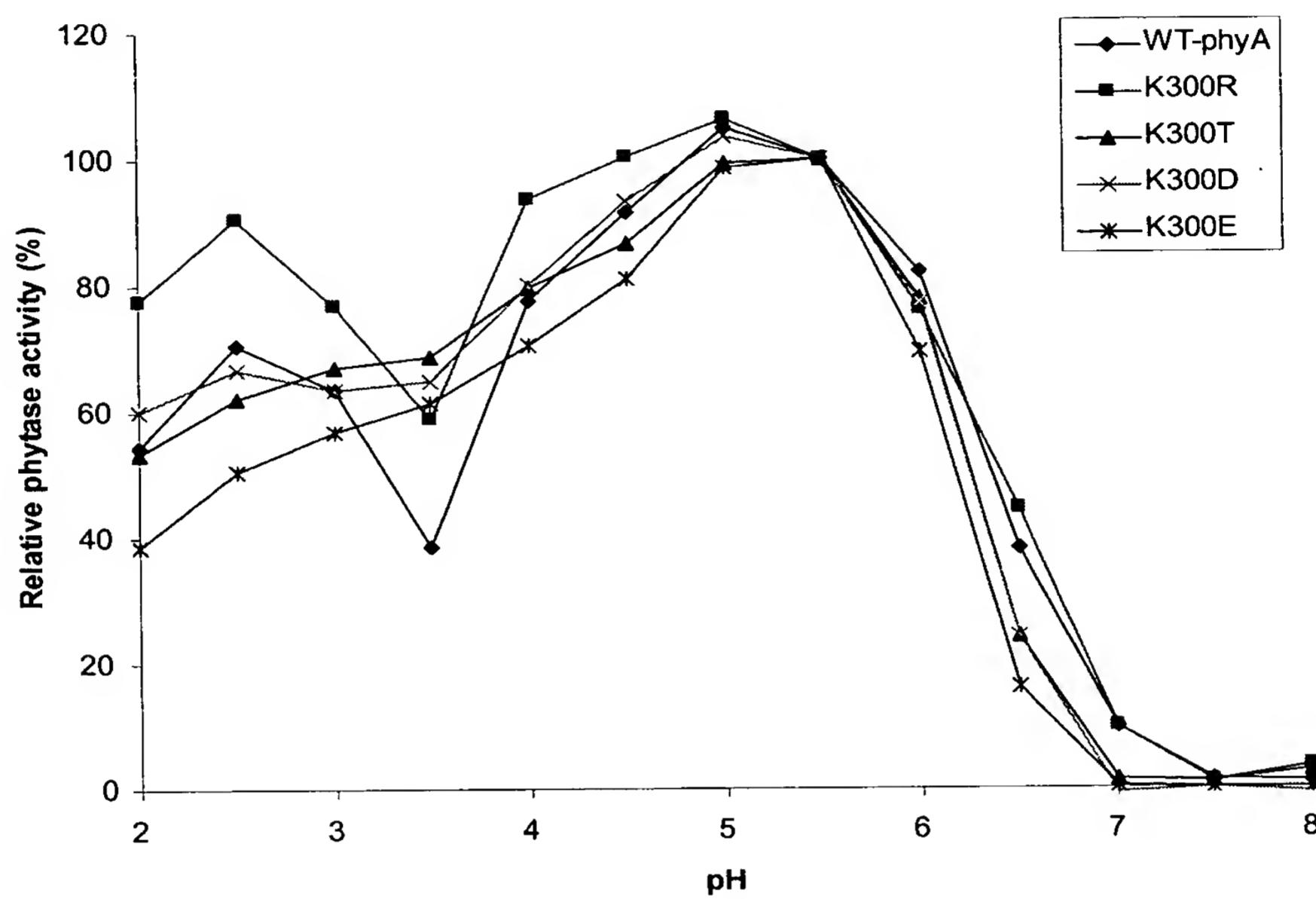


FIG. 8F

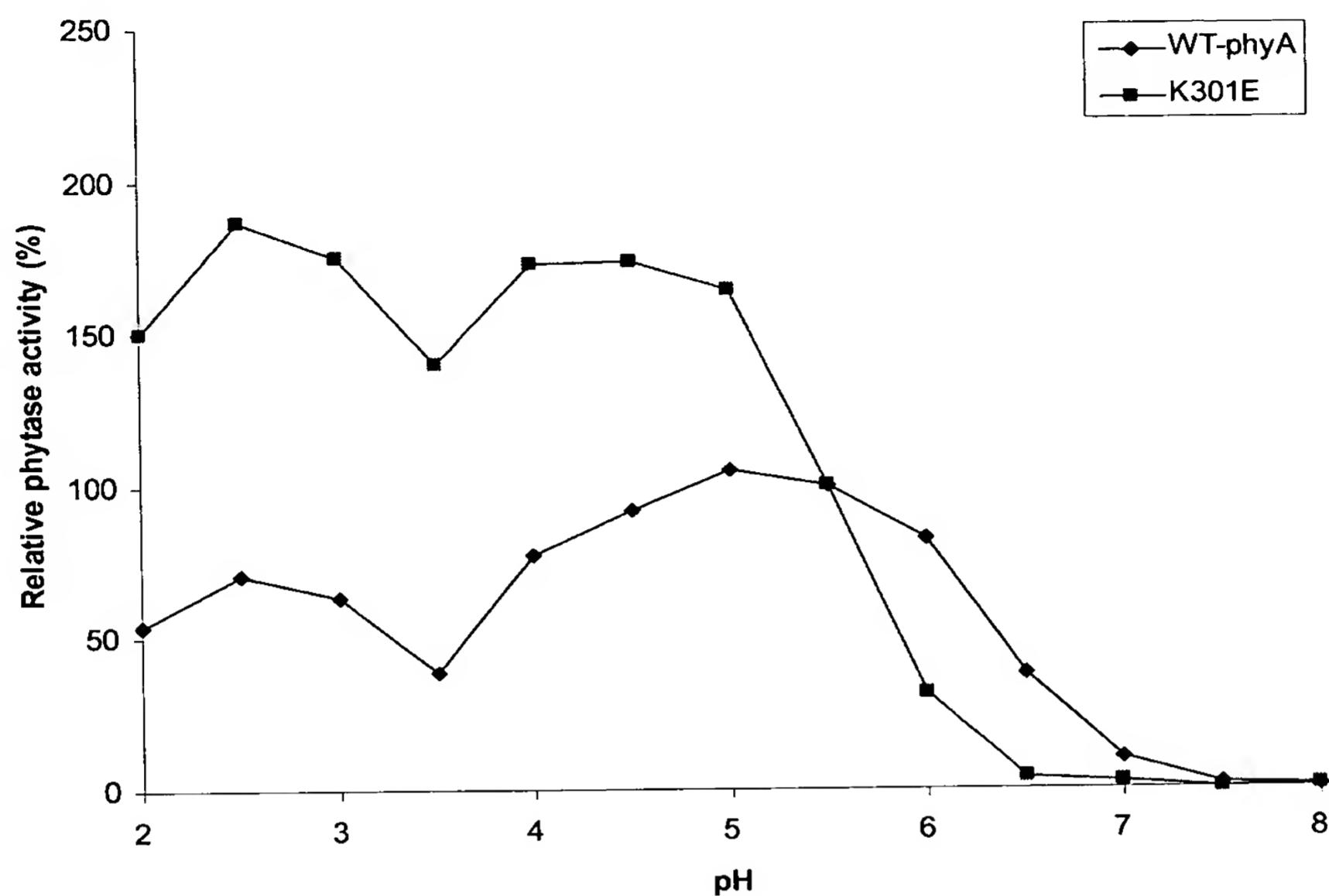


FIG. 8G

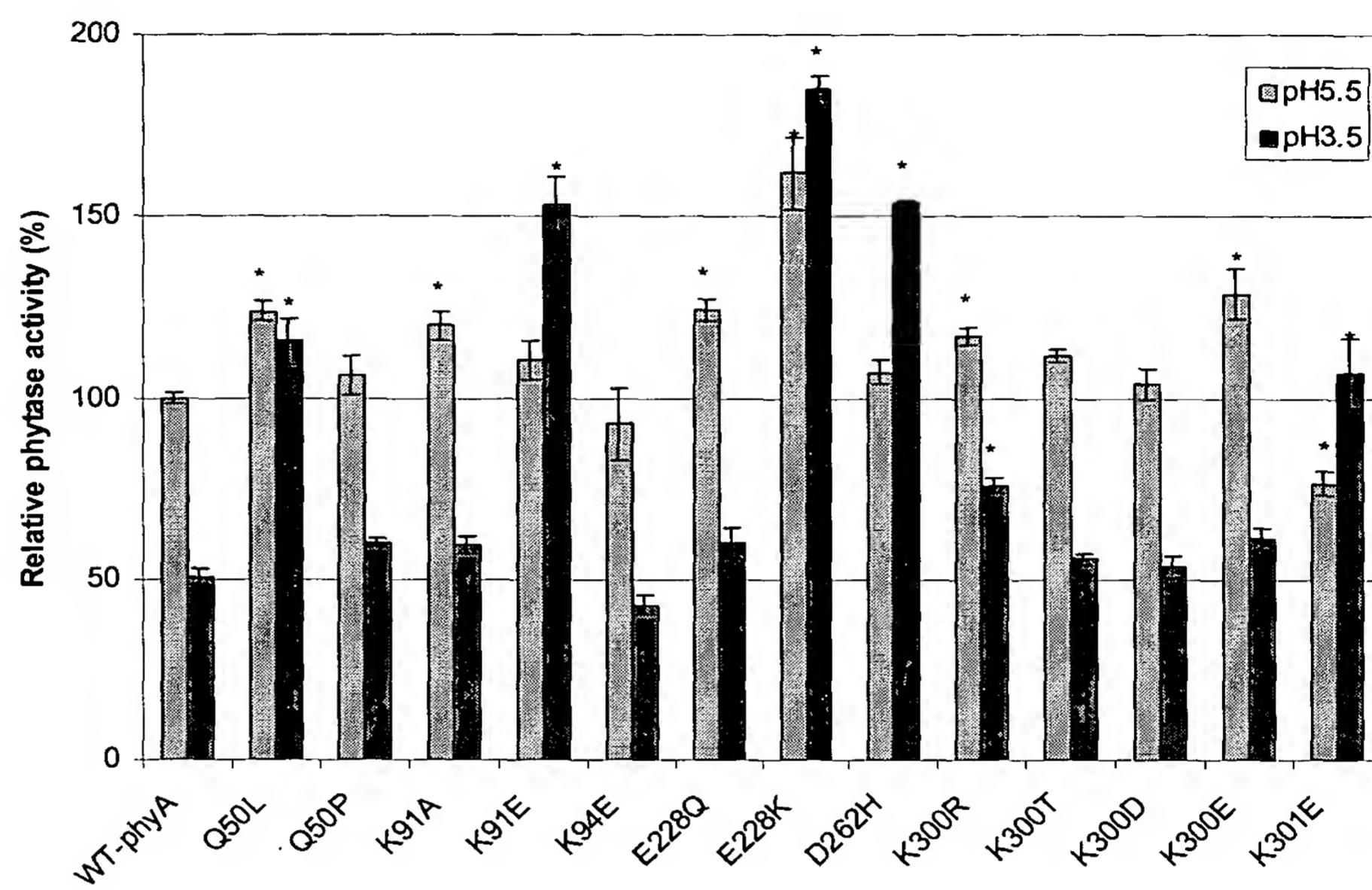


FIG. 9

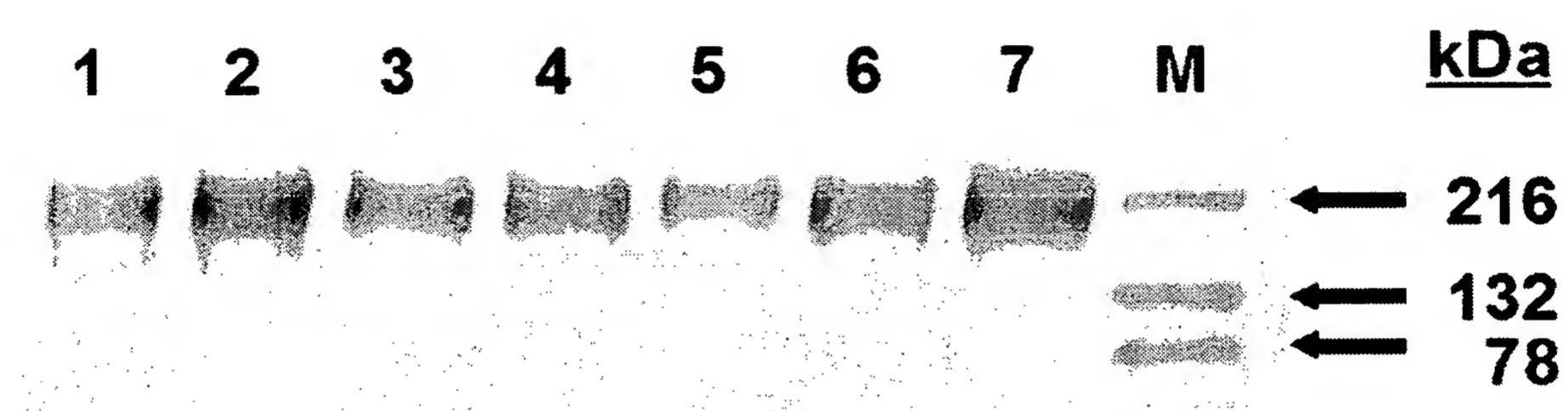


FIG. 10A

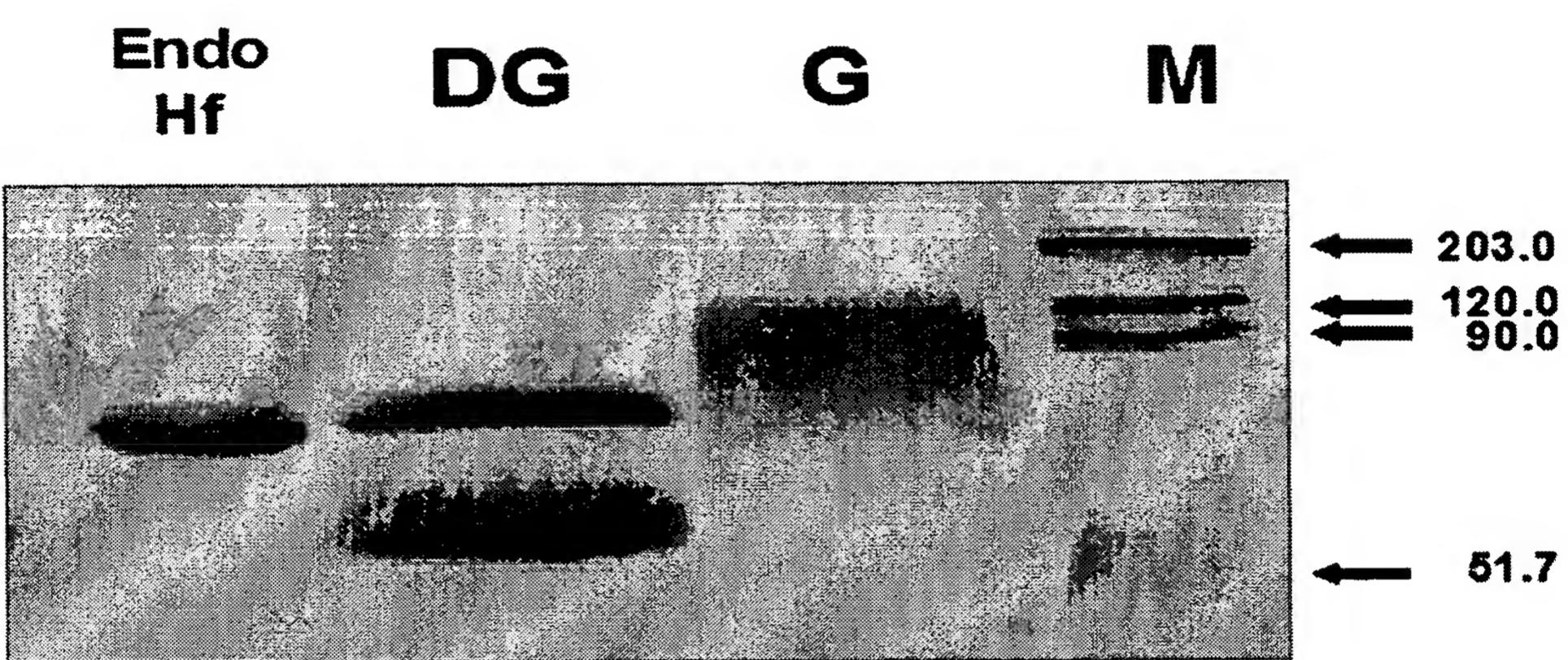


FIG. 10B

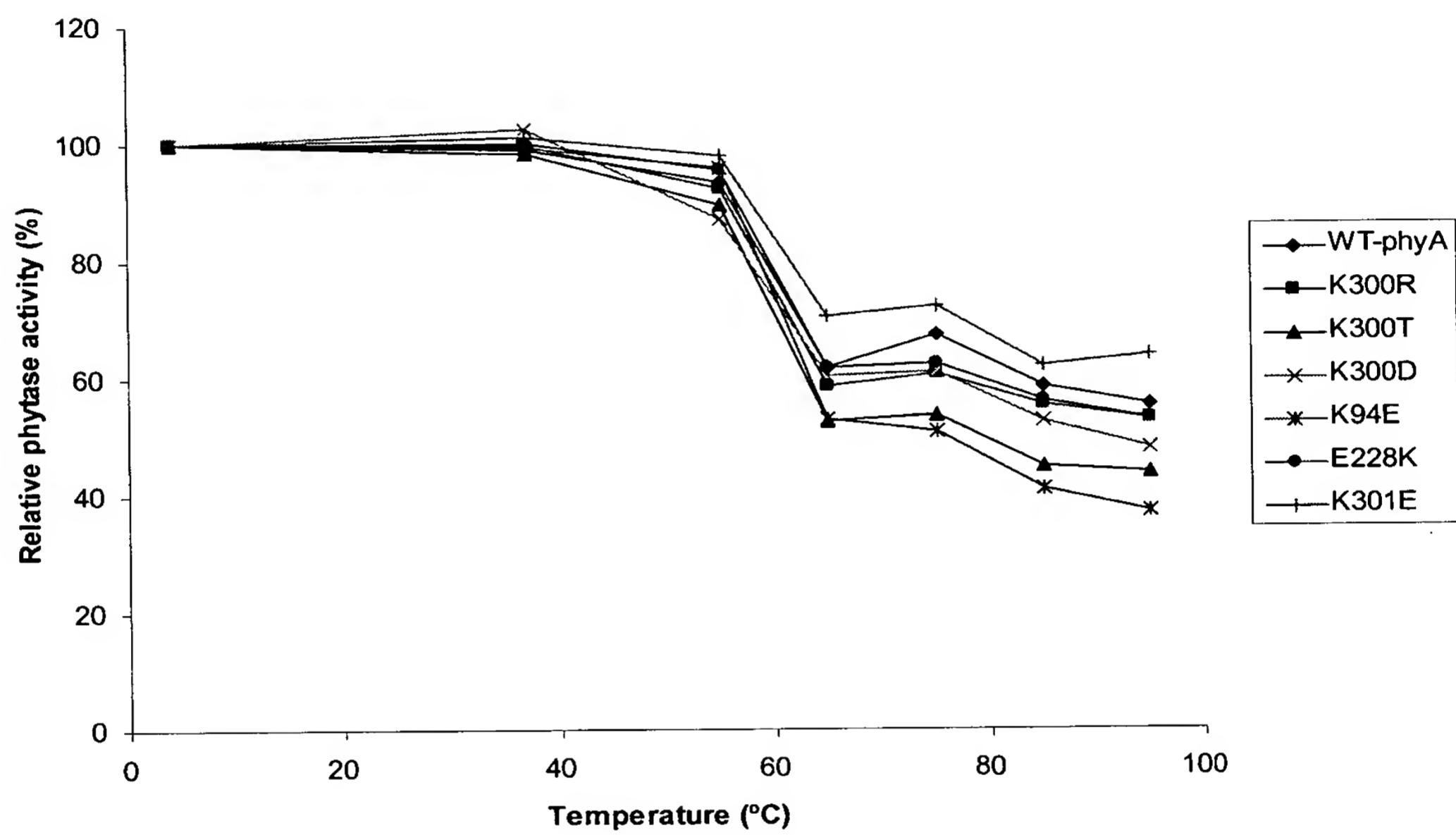


FIG. 11

1st line: Asp. terreus phytase
 2nd line: Asp. niger phytase
 3rd line: Asp. fumigatus phytase

1	MGVFVVLLSI	ATLFGSTSGT	ALGPRGNHSD	CTSVDRGYQOC	EPELSHKWGL	
1	MGVSAVLLPL	YLLSGVTSGL	AVPASRNQSS	CDTVDOGYQOC	FSETSHLWGQ	
1	MVTLTFLLSA	AYLLSGRVS-	AAPSAGSKS	CDTVDLGYQOC	SPATSHLWGQ	
*****				SSS	SSSS	
51	YAPYFSLQDE	SPFPLDVPDD	CHITEVOLIA	RHGARSPTDS	KTKAYAATIA	
51	YAPFFSLEANE	SVISPEVPAG	CRVTFAOVLIS	RHGARYPTDS	KGKKYSALIE	
50	YSPFFSLEDE	LSVSSKLPKD	CRITLVQVLS	RHGARYPTSS	KSKKYKKLVT	
*****	SSS		S	SSSSSSSSSSSS	HH	HHHHHHHHHH
101	AIQKNATALP	GKYAFLKSYN	YSMGSENINP	FGRNQLQDLG	AOFYRRYDTL	
101	EIQONATTFD	GKYAFLKTYN	YSLGADDLTP	FGEQELVNNSG	IKFYQRYESL	
100	AIQANATDFK	GKFAFLKTYN	YTLGADDLTP	EGEOQLVNNSG	IKFYQRYKAL	
*****	HHHH	HHH	SSSH	HHHHHHHHHH	HHHH	HH
151	TRHTNPEVRA	ADSSRVHESA	EKEVEGFQNA	RQGDPHANEH	QPSPRVDVVI	
151	TRNIVPFIRS	SGSSRVIASG	KKFIEGFQST	KLKDPRAQPG	QSSPKTDVVI	
150	ARSVVPETRA	SGSDRVIASG	EKFIEGFQOA	KLADPGA-TN	RAAPATSVII	
*****	H	SSS	SS	HHHHHHHH	HH	SSS
201	PEGTAYNNTL	EHSICTAFEA	STVGDAADN	FTAVFAPATA	KRLEADLPGV	
201	SEASSSNNTL	DPGTCTVFED	SELADTVEAN	FTATEVPSIR	QRLENDLSGV	
199	PESETFNNTL	DHGVCCTKFEA	SQLGDEVAAN	FTALEFAPDIR	ARAEKHLPGV	
*****		HHH				
251	QLSADDVVNL	MAMCPFEETVS	LTDDAHTLSP	FCDLFTAAEW	TQNYIILSLD	
251	TLTDTEVTVYL	MDMCSFDTIS	TSTVDTKLSP	FCDLFTHDEW	INYDYLQSLK	
249	TLTDEDVVSI	MDMCSFDTVA	RTSDASQLSP	FCQLFTHNEW	KKNYLQSLG	
*****	HHHHHH	HHHHHHH	HH	HHHH	HHHHHHHHHH	
301	KYYGYGGGNP	LGPVQGVGWA	NELTARLTRS	PVHDHTCVNN	TLDANPATFP	
301	KYYGHGAGNP	LGPTQGVGYA	NELIARLTHS	PVHDDTSSNH	TLDSSPATFP	
299	KYYGYGAGNP	LGPAQGIGFT	NELIARLTRS	PVQDHTSTNS	TLVSNPATFP	
*****	H	HH	HHHHHHHH	H	HHH	
351	LNATLYADES	HDSNLVSIFW	ALGLYNGTKP	LSQTTVEDIT	RTDGYAAAWT	
351	LNSTLYADFS	HDNGIISILF	ALGLYNGTKP	LSTTTVENIT	QTDGFSSAWT	
349	LNATMYVDFS	HDNSMVSIFF	ALGLYNGTEP	LSRTSVESAK	ELDGYSASWV	
*****	SSSSSS	HHHHHHHH	H			
401	VPEAARAYIE	MMOCRAEKOP	LVRVLVNDRV	MPLHGCAVDN	LGRCKRDDFV	
401	VPEASRLYVE	MMOCQAEQEP	LVRVLVNDRV	VPLHGCPVDA	LGRCTRDSFV	
399	VPEGARAYFE	TMOCKSEKEP	LVRALINDRV	VPLHGCDVDK	LGRCKLNDFV	
*****	SSSSSS	SSSS	S	SSSSSS SS	SSHHHH	
451	EGLSFARAGG	NWAECF-				
451	RGLSFARSGG	DWAECFA				
449	KGLSWARSGG	NWGECFS				
*****	H	HH	HHGTT			

*Red letter shows the mutation site for substrate binding site.
 *Bold letters are known as critical catalytic active sites.

FIG. 12

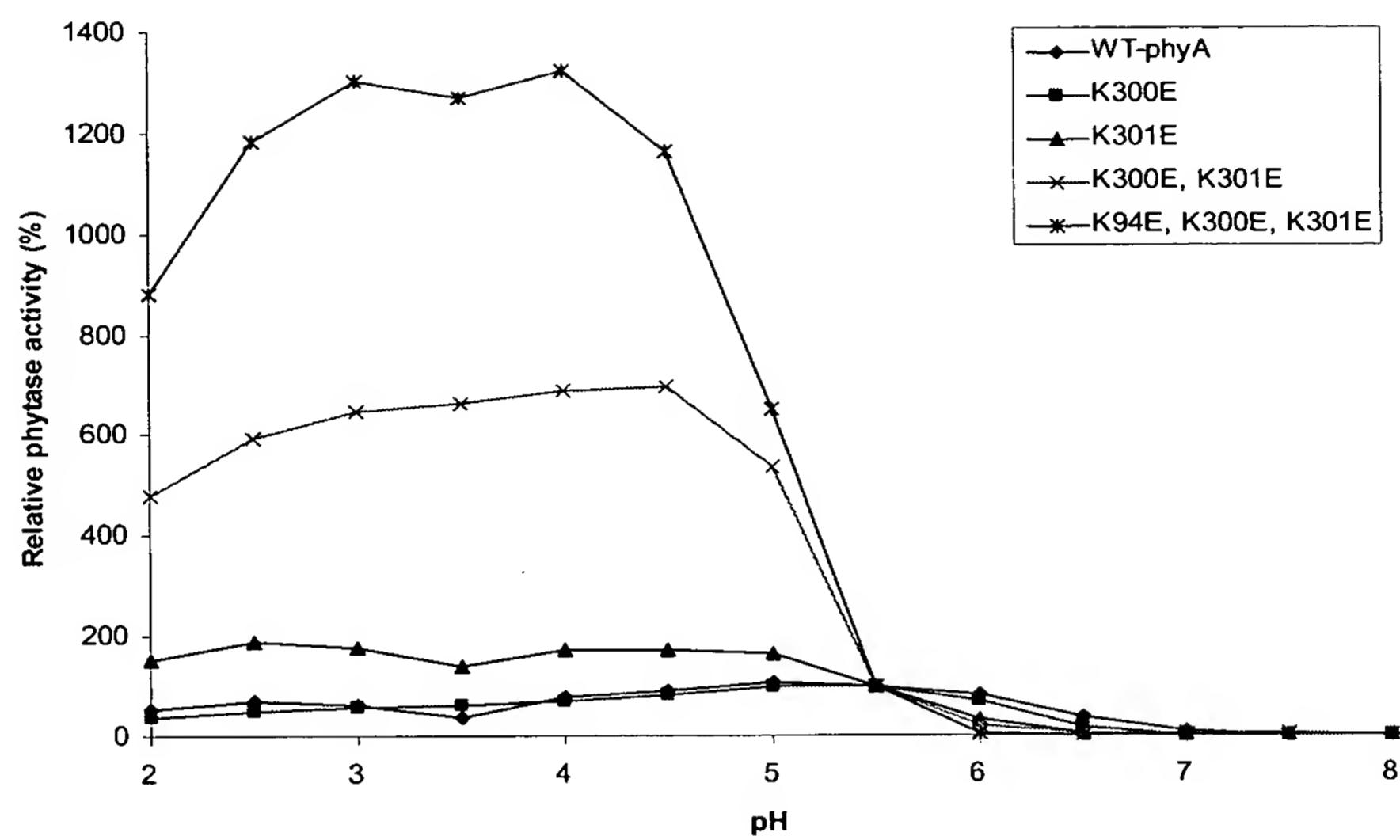


FIG. 13A

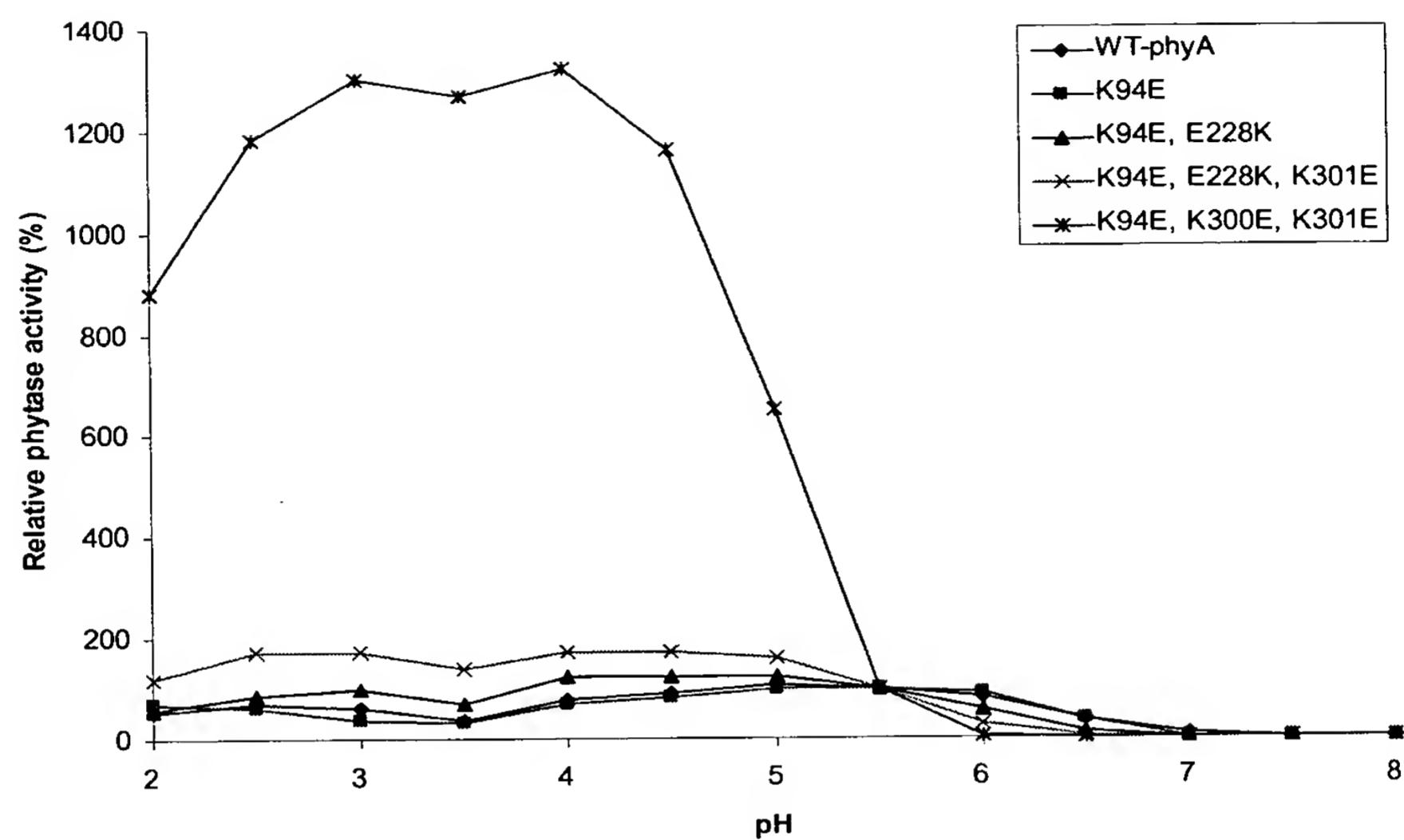


FIG. 13B

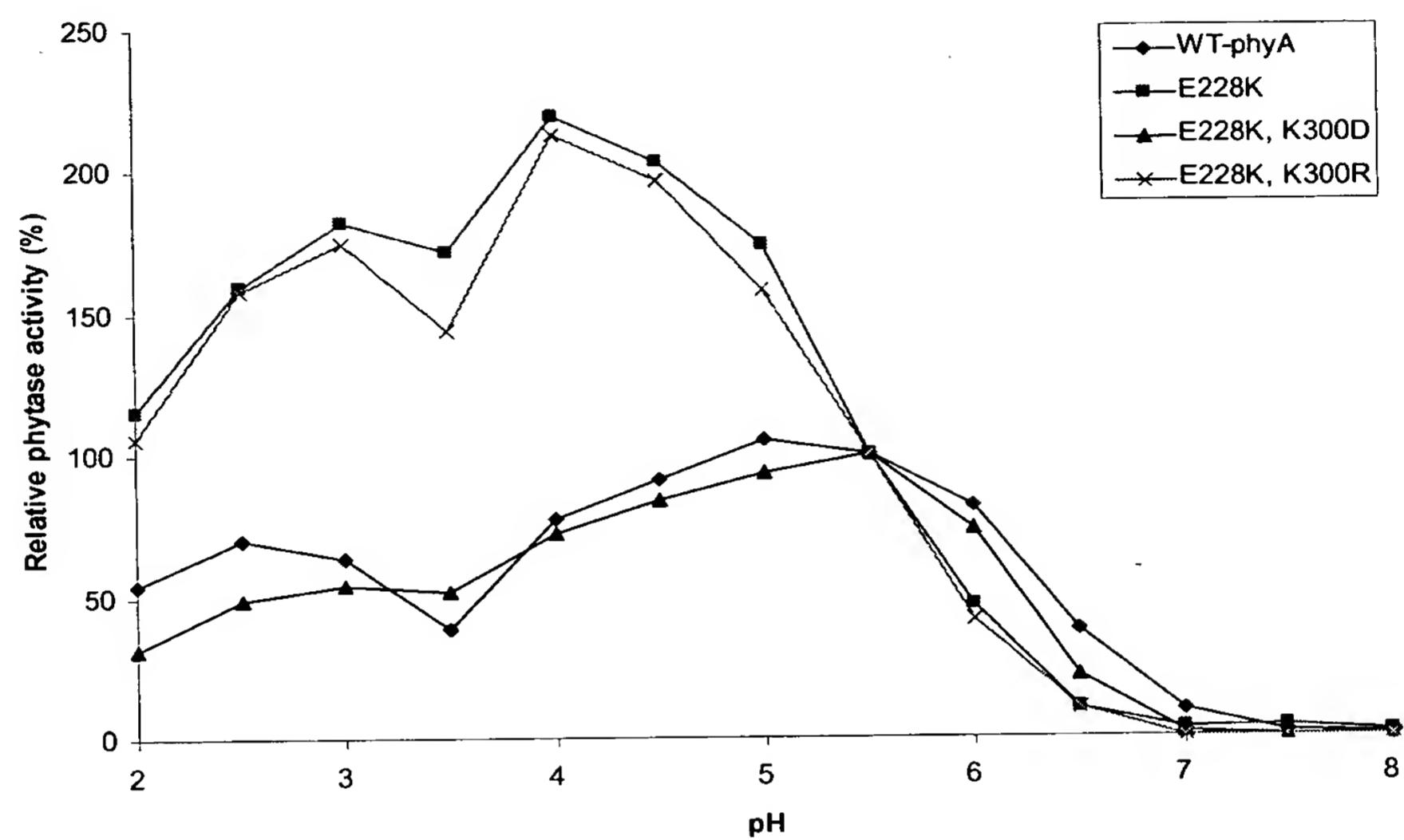


FIG. 13C

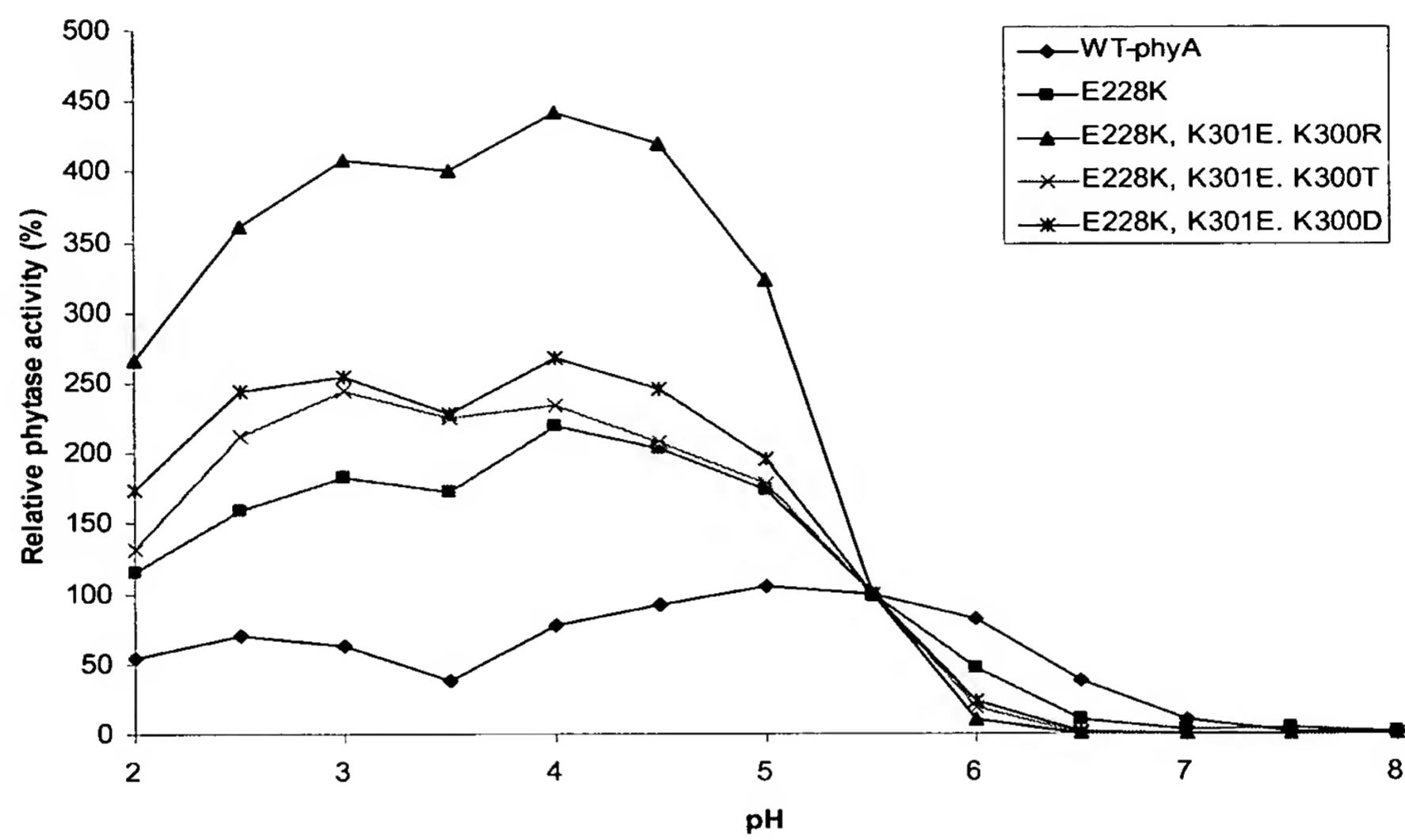


FIG. 13D

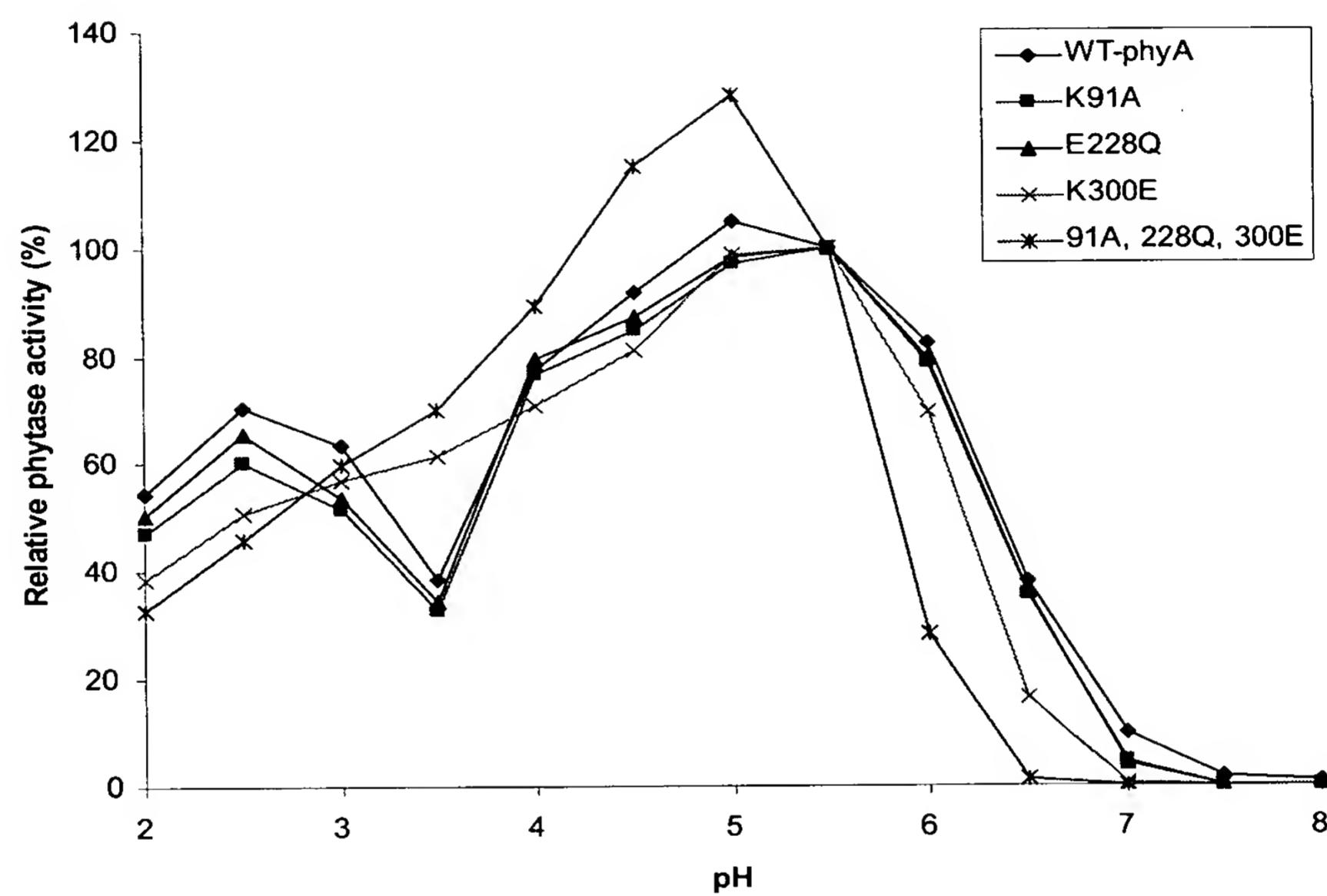


FIG. 13E

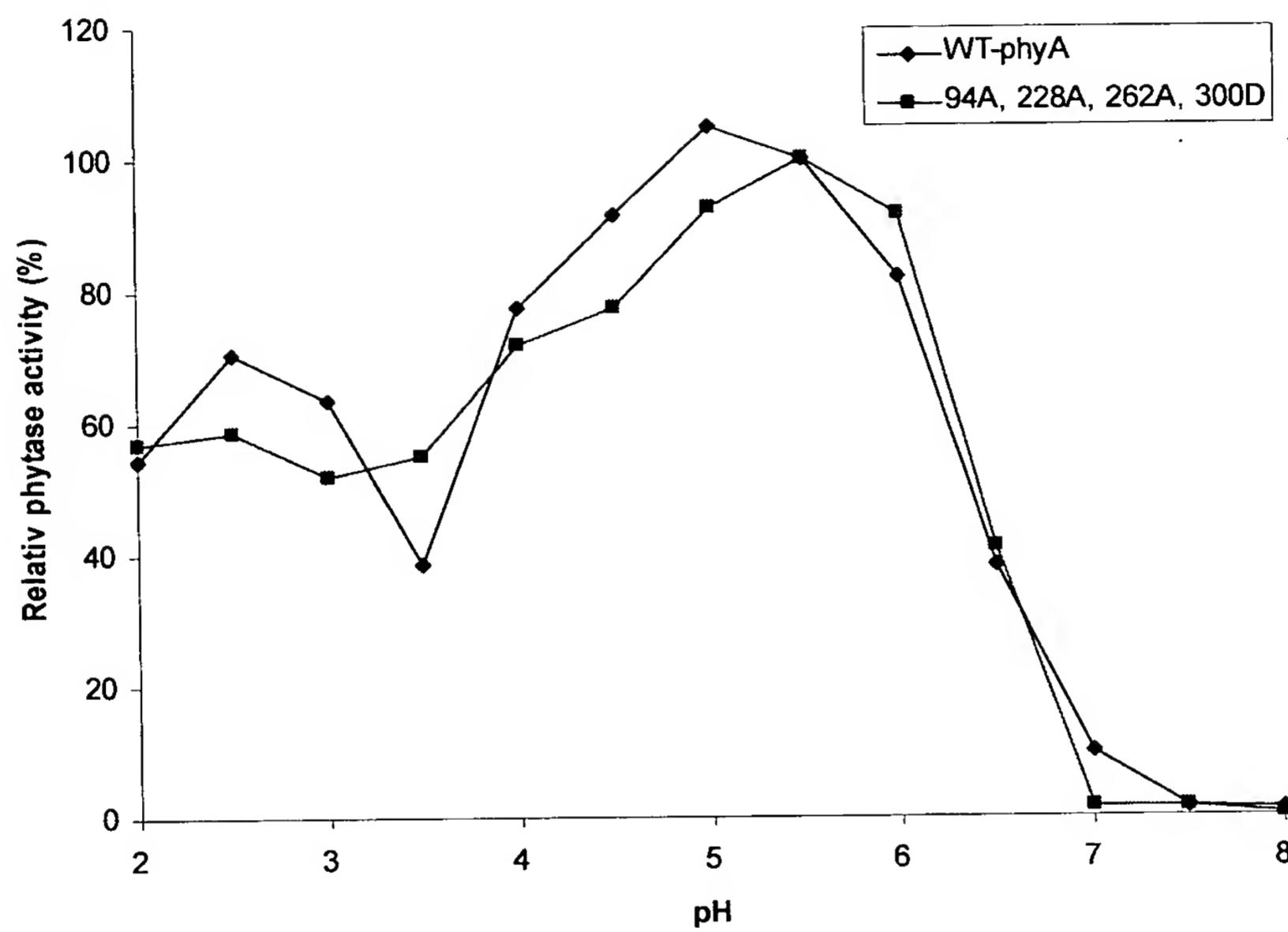


FIG. 13F

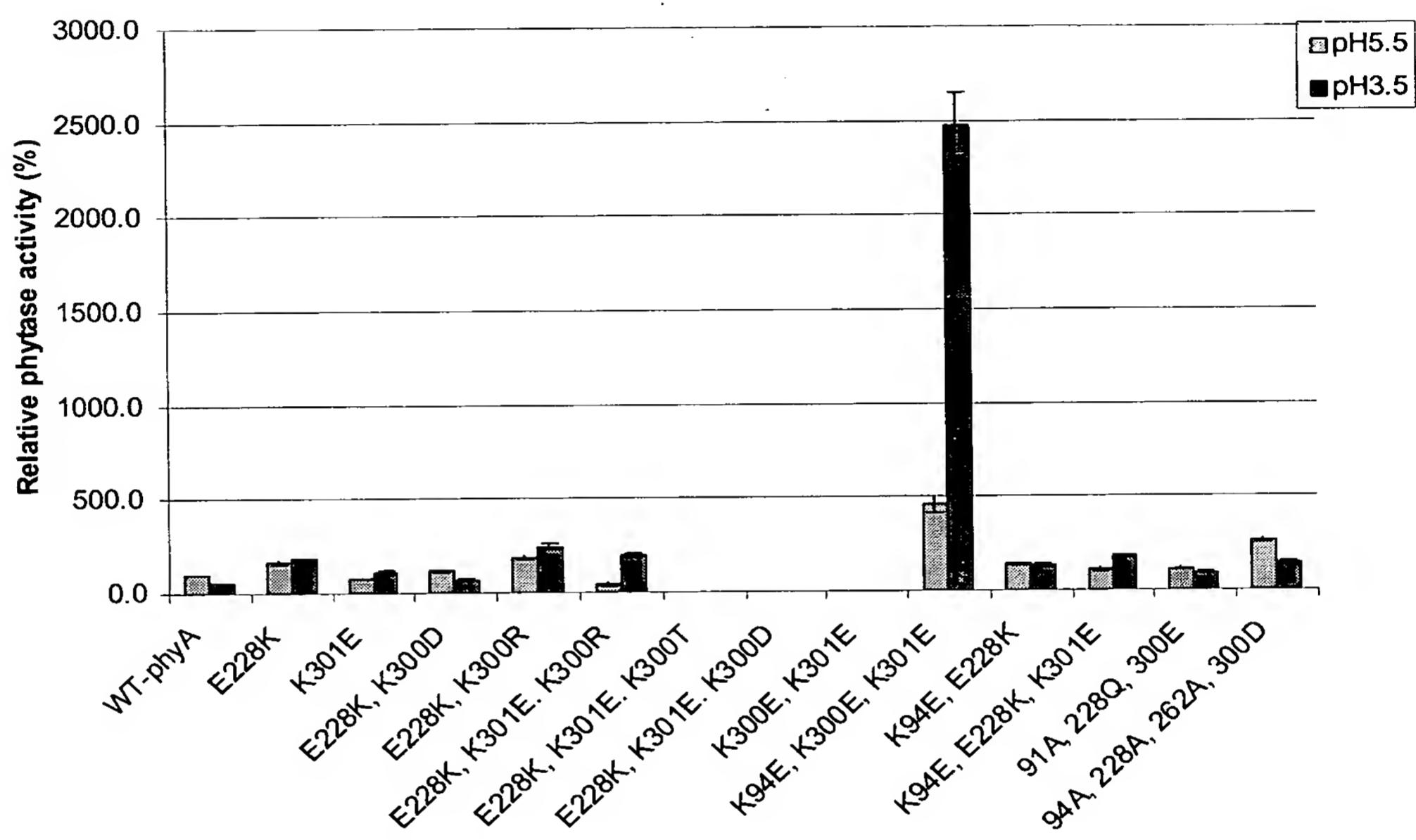


FIG. 14A

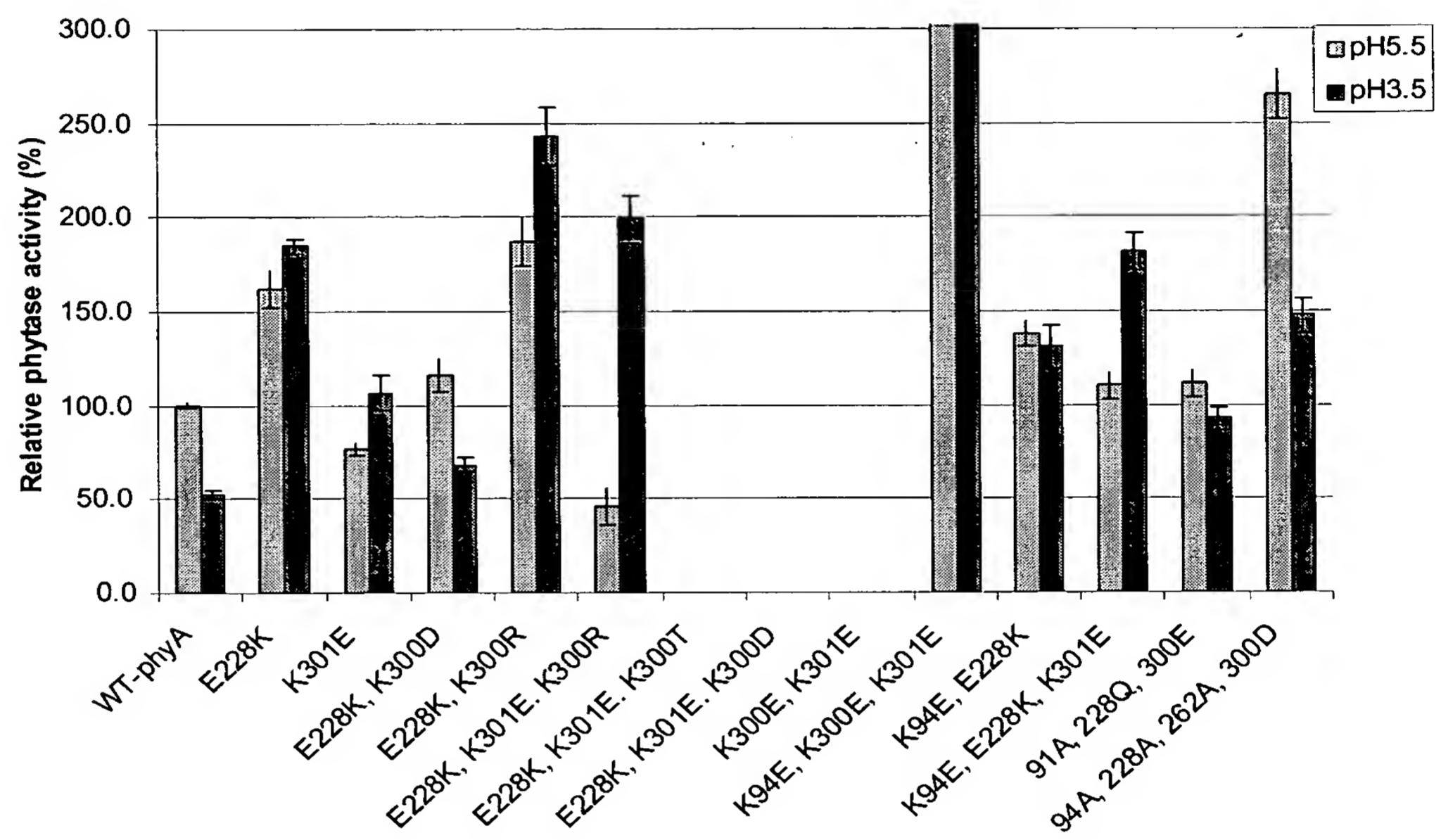


FIG. 14B

Plasma Inorganic Phosphate (PIP) of Pigs Fed Low-P Diets

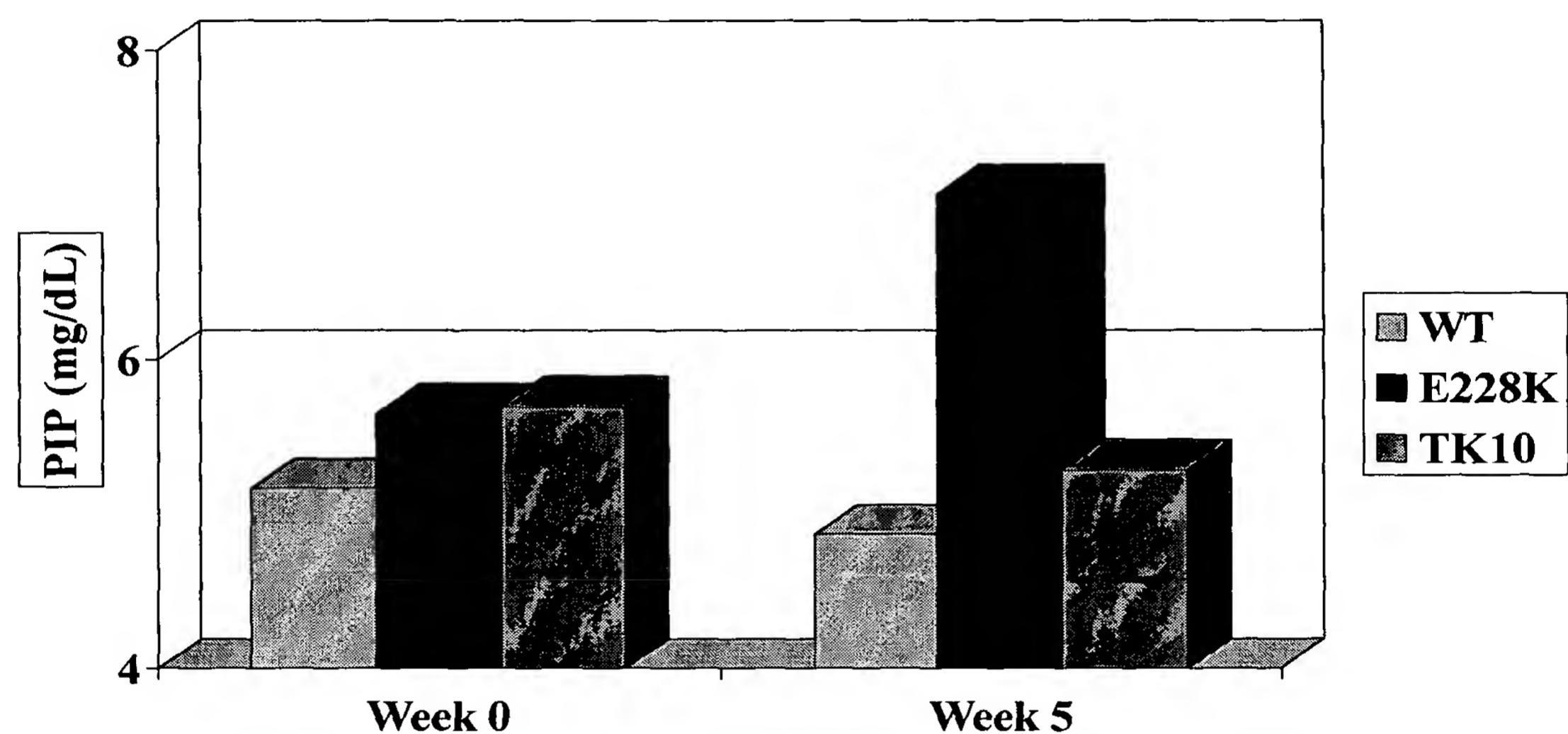


FIG. 15

Plasma Alkaline Phosphatase (AKP) Activity of Pigs Fed Low-P Diets

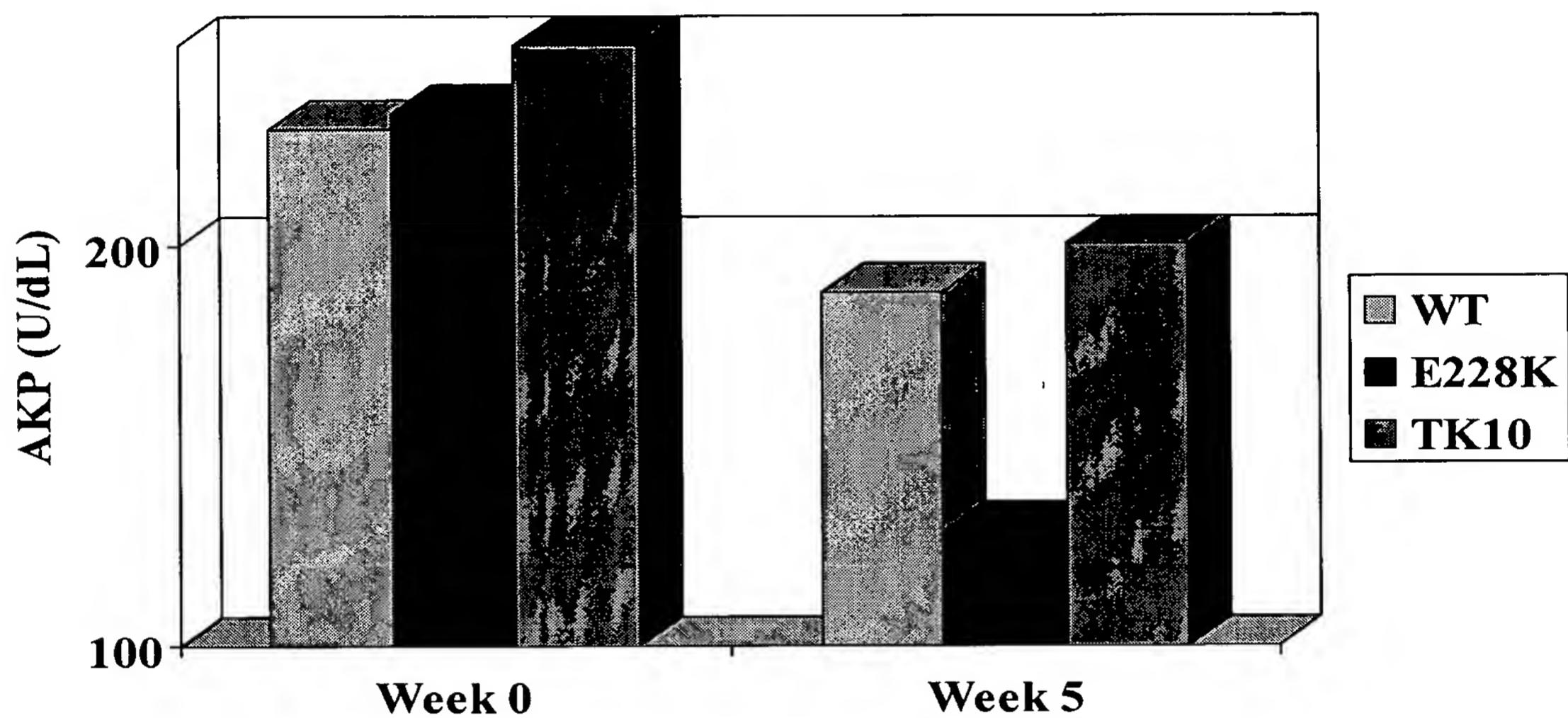


FIG. 16

Average Daily Gain (ADG) of Pigs Fed Low-P Diets

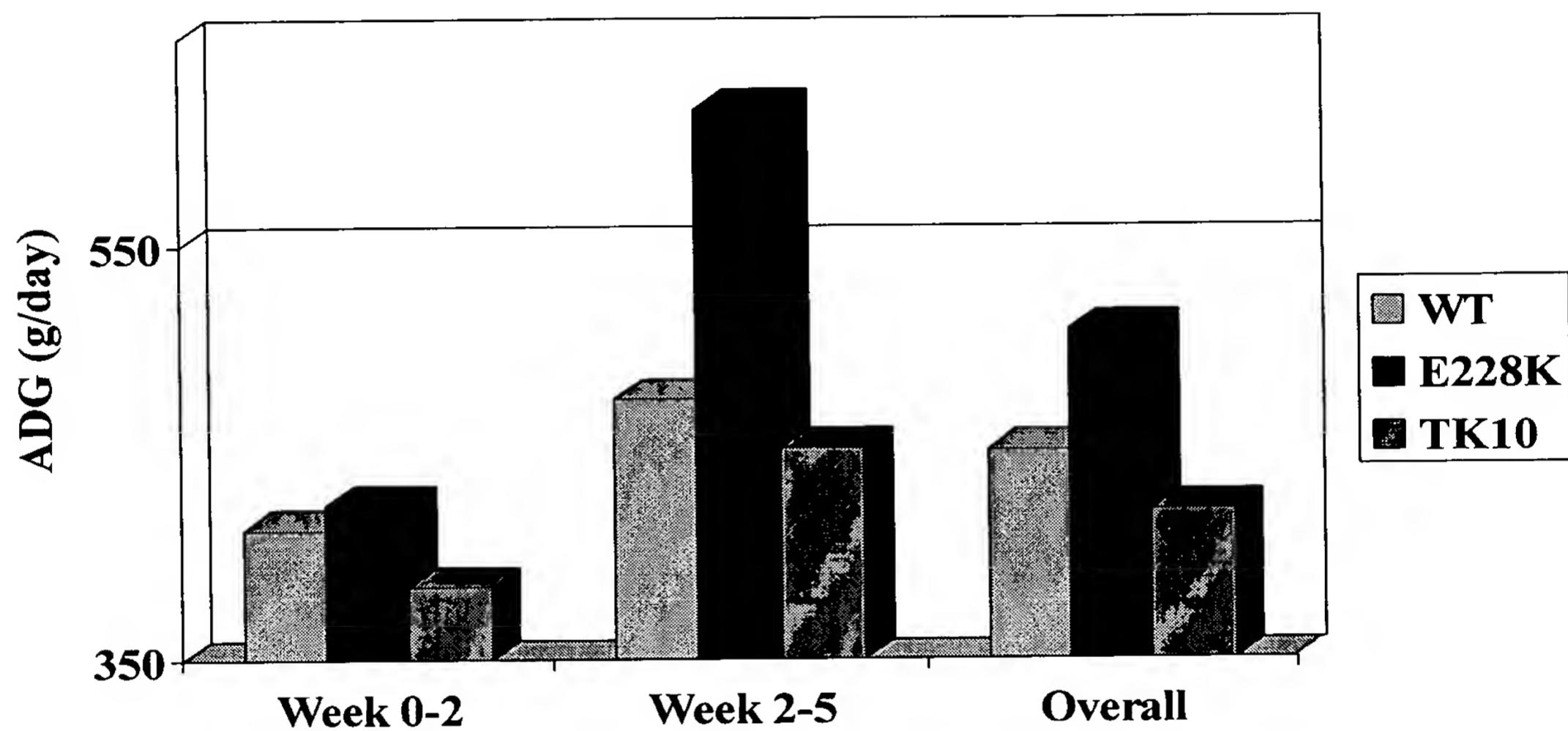


FIG. 17

Gain/Feed of Pigs Fed Low-P Diets

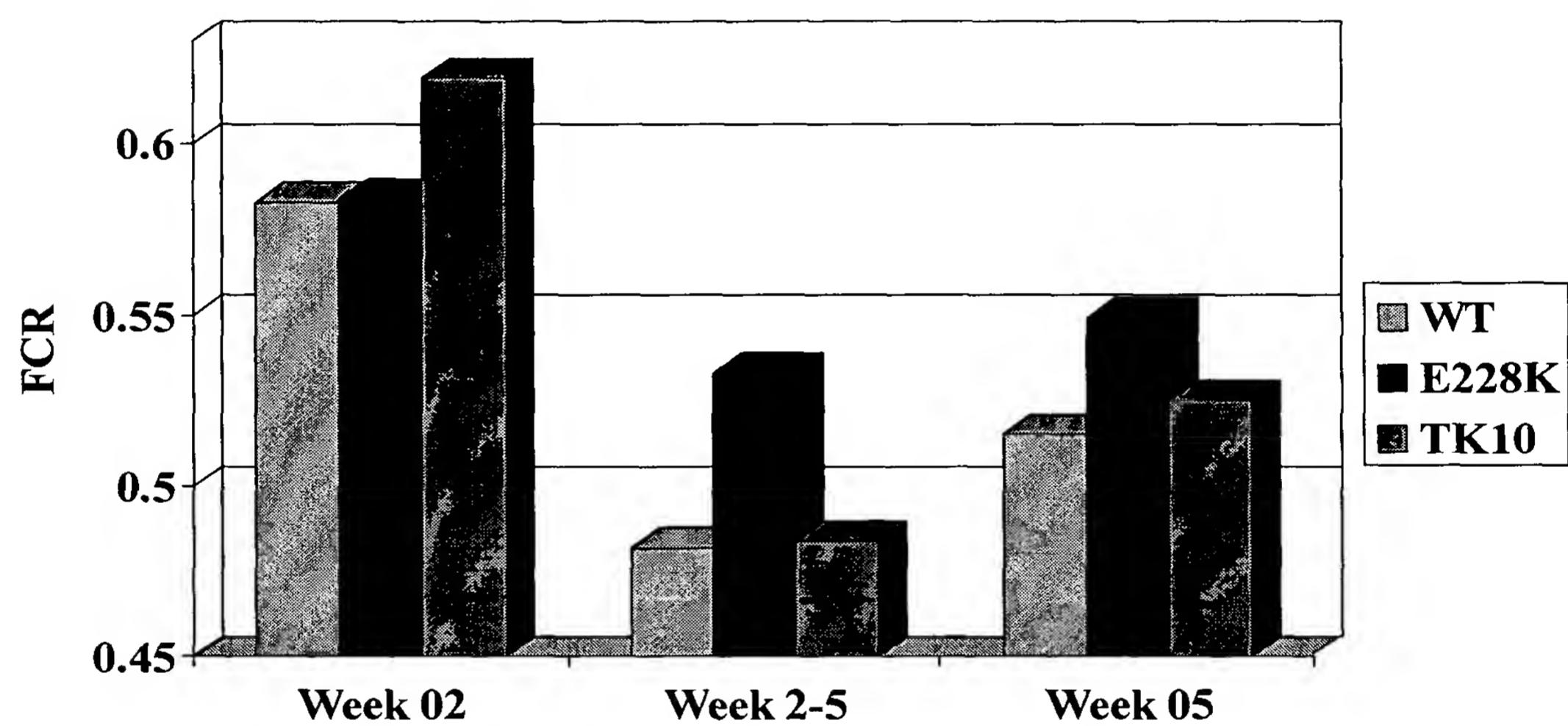


FIG. 18